Two Sections—Section One

AUGUST 24, 1929

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Railway Age

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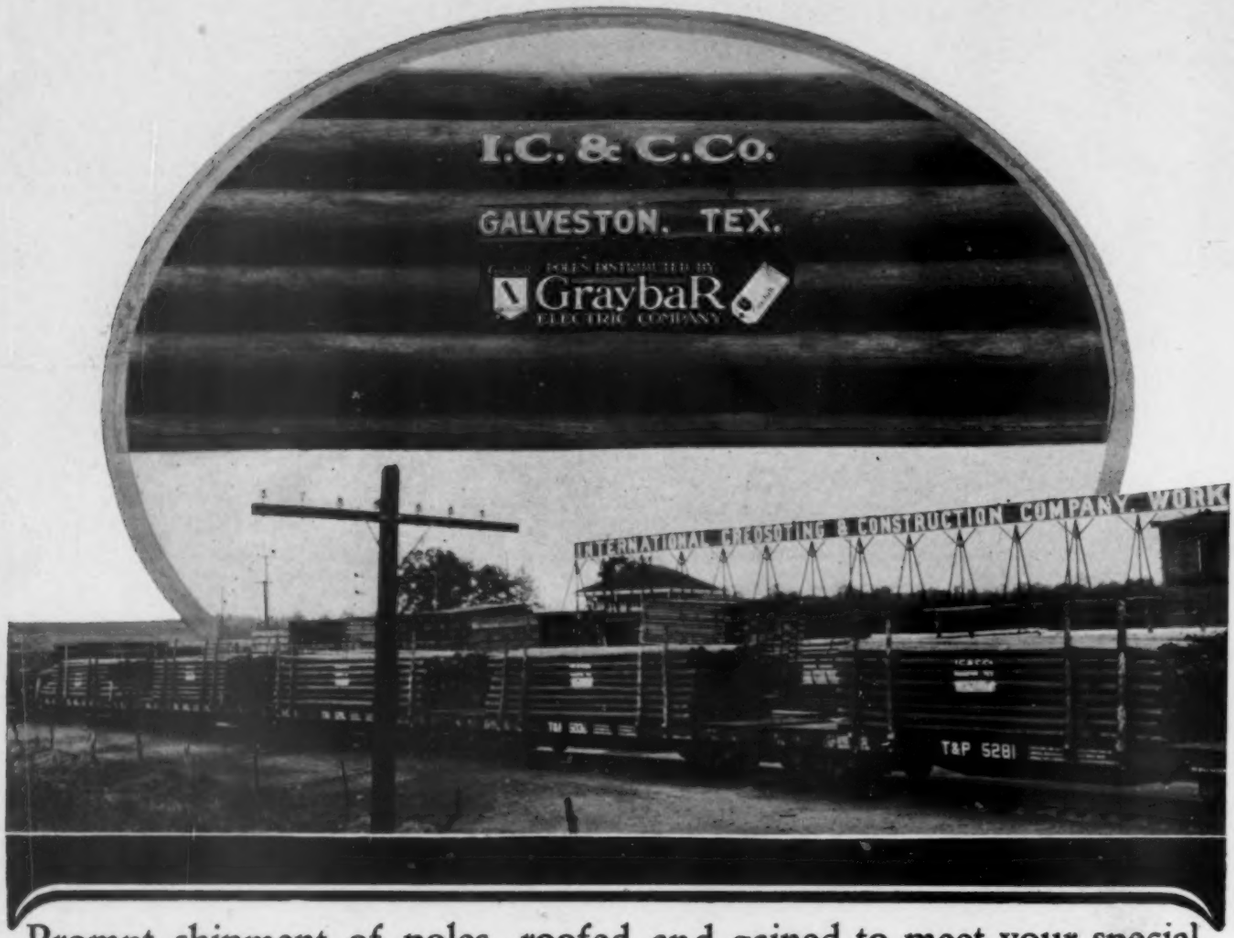
Alphabetical Index to Advertisers Page 56

Buyers Directory of Advertisements Page 50



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Vol. 87 August 24, 1929 No. 8

In this Issue

Southern Pacific Adopts Novel Advertising Copy .... Page 450

F. S. McGinnis, passenger traffic manager, and K. C. Ingram, general advertising agent of this road tell of illustrated booklets which are produced for sale and discuss the use of "department store" newspaper ads.

Beautiful Bridges Outstanding Feature of the Nice-Coni Railway 453

F. C. Livingston describes unusual engineering problems involved in construction of this new international line which cost $450,000 a mile.

D. & R. G. W. Buys Ten 4-8-4 Type Locomotives 457

An article describing this new equipment with tractive force of 63,700 lb. which was purchased for passenger service between Denver and Salt Lake City.

EDITORIALS

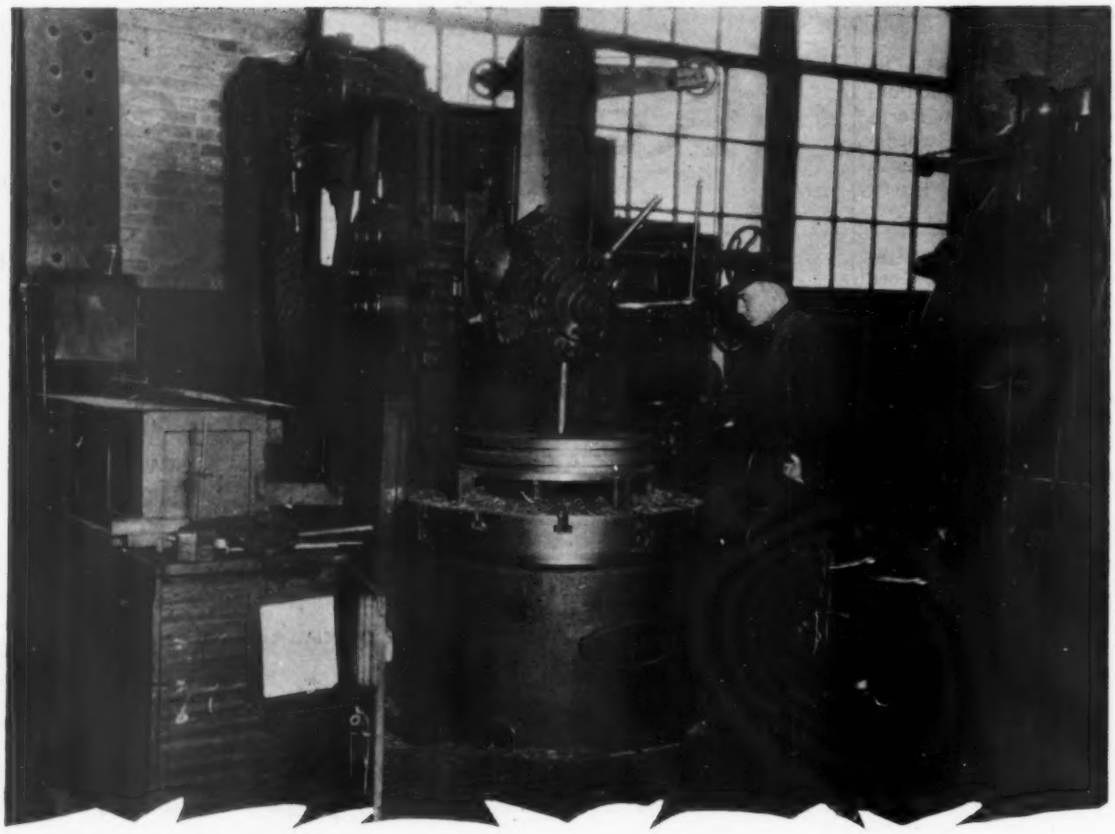
How New Capital Curtails Labor Costs 447
Rebuilding Railroads 448
Starting and Stopping Trains 448
Rectifying Errors 449
The Hudson Bay Railway 449
The Decision in the New York Trucking Case 449

GENERAL ARTICLES

Southern Pacific Adopts Novel Advertising Copy, by F. S. McGinnis and K. C. Ingram ... 450
Beautiful Bridges Outstanding Feature of the Nice-Coni Railway, by F. C. Livingston 453
D. & R. G. W. Buys Ten 4-8-4 Type Locomotives 457
Saving a Million Dollars in Car Hire, by R. B. Aylward 459
Misscuri Pacific Speeds Up Terminal Operation, by W. Rogers 462
Status of Railroad Consolidation, by F. J. Lisman 463
The A. C. L. Turns the Corner 465
I. C. C. Favors Trucking in New York 467
New Type of Storage for Locomotive Sand 473
The Young Unit Heater with Recirculating Box 473
Operators on Pennsylvania Become Weather Forecasters 474
Freight Car Loading 474

COMMUNICATIONS AND BOOKS 475
LOOKING BACKWARD 476
ODDS AND ENDS OF RAILROADING 477
NEWS OF THE WEEK 478

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service



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Railway Age

Vol. 87, No. 8 August 24, 1929

Table of Contents Appears on Page 5 of Advertising Section

How New Capital Curtails Labor Costs

THE remarkably effective use that railway managements have been making of new capital as a means of curtailing operating costs has been hardly second in the importance of its economic consequences to the improvement that has been made within recent years in freight service. Cost of labor is, of course, very much the largest item in operating expenses. The average wage has been rising constantly since 1923. The total payroll is the resultant of the average wage multiplied by the number of persons employed. The freight traffic of the railways in the first six months of this year was the largest ever handled in the first half of any year, and was 6.6 per cent larger than in the first half of 1928. It might naturally be expected that so substantial an increase in traffic would be accompanied by an increase in the total payroll, and apparently it has been. Wage statistics are available for only the first four months of the present year. In those months the total wages paid were about $21,500,000 greater than in the first four months of 1928. It is significant, however, that the increase was not due to an increase in the number of employees.

On the contrary, the average number of employees was approximately 3,200 less than in the corresponding part of last year, although the number last year was the smallest since 1922. Perhaps when complete statistics for the first half of 1929 are available they will show that the largest freight traffic in history was handled with the smallest number of employees since 1922.

This process of increasing the traffic handled more in proportion than the number of employees, or actually increasing the traffic handled while reducing the number of employees, and thereby increasing the output per employee, is, of course, not a new one. It was easier to carry it on before the war, however, than it has been since, because traffic was growing more rapidly then and the restrictions upon the number of hours that employees could be required to work were much less stringent than they are now. The average number of tons carried one mile per employee annually reached 248,326 in 1917—the largest figure up to that time. Government operation was then adopted and a little later the eight-hour day for practically all employees became effective. The result of the reduction of working hours was that during the next five years the annual output per employee averaged only 220,000 ton-miles, and even in 1923, when freight business exceeded all previous records, it was only 245,596, or less than in 1917.

In 1923 the railway presidents adopted and announced a program for the general improvement of the service and rehabilitation of the facilities of the railways. Since that time the number of employees has been declining, while the amount of traffic handled, with occasional downward fluctuations, has been increasing. In consequence, in 1928 the average output of ton-miles per employee was 287,920, a figure which was the highest that has ever been attained, and which exceeded that of 1923 by about 13 per cent. The increase in the output per employee has been due much less in proportion to the increase in freight business than to reduction in the number of employees. The increase in traffic during this five years was only about 4.4 per cent, while the reduction in the number of employees was 11 per cent. Meantime, the average wage was increasing, and, of course, the payroll would have increased if the number of employees had not been reduced, but the total payroll actually was less in 1928 than in 1923. On the basis of the average wage paid last year the reduction in the number of employees in 1928, as compared with 1923, effected a saving in operating expenses last year of about $400,000,000.

The explanation of the large reduction in the number of employees and consequent increase in the average output per employee is to be found in the capital account of the railways. Their total investment per employee at the end of 1923 was about $11,700. At the end of 1928 it was about $15,300, an increase of approximately one-third. Capital has been invested partly to enlarge the capacity of the railways and enable them to handle more traffic. Probably never in history, however, have the railways invested relatively so much capital for the express purpose of saving fuel, materials and labor, and especially labor, as during the last five years. The facilities provided for saving labor have been of almost innumerable kinds. The most familiar are larger freight cars and locomotives of greater power and speed. The railways have fewer locomotives now than they had five years ago; but they have 14 per cent more locomotive tractive power per employee than they had then. They have fewer freight cars than they had then; but they have 18 per cent more freight car capacity per employee. The reduction of grades, the strengthening of tracks, the installation of block signals, the installation of more and

better machine tools in shops—these and many other things have so changed railway plants as to enable them to produce an increased amount of transportation with a reduced amount of labor. In the first half of 1929 they handled 6 per cent more freight business than in the first half of 1923, with probably 11 per cent less employees.

Effects Upon Labor

The results to labor of this effective use of capital to reduce the amount of labor employed must be regarded from different standpoints. It has caused many men to be thrown out of work, and many others to fail to get promotions that they otherwise would have secured. It has been bad for those who have been thus affected unless they have secured employment elsewhere or have been compensated in other ways. And yet, policies that result in increasing output in proportion to the amount of labor employed must, in the long run, be beneficial to labor in general, because only by these means can the amount of the necessities, comforts and luxuries made available per capita be increased. Most of those who have retained their employment plainly have not been injured. The earnings of the average railway employee in 1923 were $1,617, and in 1928 they were $1,707, and average earnings per employee are running at a higher average rate this year than they did last year.

The reduction in operating expenses that has been mainly due to the reduction in the number of employees has helped the railways withstand the large decline that has occurred in their passenger earnings, as well as the reduction in their average freight rate. Their total earnings in the first six months of 1929, in spite of the record-breaking freight business handled, were actually less than they were in the first half of 1923. That they are now earning a larger average percentage of return than in 1923 upon a largely increased investment is entirely due to the large economies in operation, and especially in the use of labor, that they have been able to make principally because of the wise investment of capital.

Rebuilding Railroads

ONE of the outstanding developments of recent years has been the number of roads that have been changed from "streaks of rust" to modern properties, with present earning power and potentialities for greater profits. There are several instances of this on the railroad map, principally involving roads that have gone through numerous receiverships. The experiences of several of these roads are practically parallel. First came the financial reorganization on a sounder basis, then judicious expenditures for betterments, followed by sweeping operating improvements. In each case, the money available for improvements was limited and there was urgent necessity that a dollar's worth of value be obtained for every dollar spent. Close supervision by the executives themselves accomplished this desired result. Another requirement was that immediate benefits result from the money spent. This too has been brought about by immediate changes in operating practices to take advantage of the better facilities. Heavier trains and greater speed produced a higher average of gross ton-miles per train hour, and correspondingly increased earnings per train. The ability to make better time and the greater reliability of the schedules fortified the traffic department in its efforts to get more business. Better track conditions permitted the use of heavier locomotives, and improved operations permitted running these locomotives greater distances, with an attendant saving in terminal expense.

In this manner, entire railroads have been rebuilt, not only from a physical standpoint, but from an operating standpoint as well. The results so far have justified the optimism of those who have provided the money.

Starting and Stopping Trains

FEW railways are really rich, but some are and can do whatever is necessary to improve their service. The best passenger train on a railway that is really rich started out of a station while the dining car was crowded with passengers who were eating lunch. One passenger had a bowl of milk. The train started with a violence that seemed almost sufficient to pull it apart, and most of the milk splashed into the passenger's lap. The passenger immediately began to curse the management of the railways in general, and of this one in particular. He remarked in a loud voice that for some time he had been considering "taking to the air" in order to get comfort and speed in travel, and that this was but one of numerous recent experiences he had had which convinced him that he should do so. The passengers around him appeared heartily to approve of what he said in condemnation of railway operation. Probably almost every passenger on the train was made about as angry as he was by the way the train was started.

The incident was not an unusual one. The train in question was composed of the most modern equipment. It included both a club car and an observation car. It had a maid to manicure the ladies' and gentlemen's nails, and a barber-valet to shave the gentlemen and press their pants. It costs a great deal to provide such service. In this instance the service was absolutely spoiled by the violent way in which the train repeatedly was stopped and started.

Some railways apparently have largely solved the problem of getting passenger trains smoothly and silently stopped and started. Others seem to have made almost no progress in this direction. One can travel upon some railways with reasonable confidence that trains will be handled well at stations, and on others with about equal confidence of being repeatedly awakened in the night, of having his soup spilled, and of having his feelings, if not his neck, fractured.

The managements and employees of our railways have solved innumerable difficult problems. The problem of getting all passenger trains started and stopped in the

right way is not insoluble. The reason why it is not solved is that not enough attention is given to it. Why will numerous railway managements persist in spending large amounts to provide passenger service that is good in practically all other respects, and in tolerating, at the same time, the most abominable starting and stopping of trains?

Rectifying Errors

SUCH a multitude of details are involved in the operation of a railroad that—human nature being what it is—errors are bound to occur. The problem is to keep these to a minimum by steadily improving methods and equipment and by the better selection and training of employees. When all this is done, however, there remains the exceedingly delicate task of dealing diplomatically with the patrons who have suffered inconvenience from such errors as may still continue to be made.

During the summer vacation season, when the passenger traffic departments are working under heavy pressure, it may not always be easy to remain good natured and considerate when things go wrong, and yet this is the very time that serious damage may be done to a railroad's reputation for good service, if mistakes are not rectified quickly and cheerfully. Some railroad managements might feel exceedingly uncomfortable if they could overhear the comments of returned travelers in talking with their friends about their summer experiences—friends who may be in a position to take the same trip next summer, if it appeals to them. Others might take a real pride in overhearing stories of how some good employee jumped into a breach and saved a situation by cheerfully helping the patron out of a tight place, caused by a mistake in selling a ticket or reserving Pullman space. The same thing is, of course, true of the freight traffic department and its operations. It is unpleasant to have to admit that mistakes will be made, but since they are, ought not special attention be paid to training the staff properly to handle those discovered?

The Hudson Bay Railway

CANADA'S northern frontier has, during the current year, been still further penetrated by the rapid progress which has been made in the construction of the Hudson Bay Railway. Steel and ties were laid on the ice and snow over the muskeg last winter and supplies rushed into Churchill, on Hudson Bay, before the spring break-up. Construction work during the summer has consisted largely of raising this track on ballast with the prospect that the work may be largely completed before the winter sets in, even though it may be some months before the line is opened to regular transportation service. This railway was originally conceived as a short route for grain to European markets, but even now experts are far from agreement that any considerable development of this kind will take place in the next few years. Rather it would seem that the principal immediate traffic must come from mining developments, which are already in progress in this territory, known to be rich in minerals.

Others have hopes that, now that the North has been penetrated, experiments with reindeer raising, fisheries and other potential economic activities may be carried out. In any event, the railroad, the construction of which involved many unusual and interesting problems, is now about to make possible equally interesting experiments in the development of economic life in what has heretofore been considered a forbidding territory. Should these experiments prove successful, a great expansion of railways in the Canadian Northwest might well result.

The Decision in the New York Trucking Case

THE decision of the Interstate Commerce Commission in the New York freight trucking case is summarized in an article which appears elsewhere in this issue. It is a decision of great importance, not only as regards the specific problems it deals with, but also in that it formulates policies governing the co-ordination of rail and highway service which may be applied to other similar situations. The "constructive station" and "trucking in lieu of lighterage," devices for providing what amounts—almost—to store-door delivery, must be abandoned, which is exactly what all but one of the railroads, parties to the case, desired. However, the commission clearly recognizes the possibilities of motor truck co-ordination in solving New York's freight problem and suggests a method by which direct delivery to consignees might be provided legally, avoiding the "tendency to create violations" of the law which were found inherent in present constructive station service and in trucking in lieu of lighterage (direct to consignee).

The decision permits the continuance of trucking between rail terminals and the so-called "inland stations" (i.e., not connected with rail terminals either by rail or water) and also trucking in lieu of lighterage for shipments destined to other railroad or steamship lines. It clearly hints that some form of store-door delivery may be the final solution to the problem, but points out that such a development can come only through railroad co-operation. The hope is expressed that union or universal "inland stations" may be established, served by motor truck, and that the expensive pier stations may gradually be discontinued. Altogether, whether one agrees entirely with the decision or not, it must be conceded that it expresses in the main a forward-looking point of view and one which gives ample opportunity for progress in rail-highway co-ordination. In these days of rapidly changing methods of handling freight, railroad men who wish to keep constantly posted on current developments will find most instructive a study of the rulings on the essential points in this case.

Southern Pacific Adopts Novel Advertising Copy*

Illustrated booklets are produced for sale—Use of "department store" newspaper ads

By F. S. McGinnis

Passenger Traffic Manager, Southern Pacific

and K. C. Ingram

General Advertising Agent, Southern Pacific

SELLING of railroad advertising material to the public, production of booklets containing no reading matter except captions accompanying pictures and maps, and development of a new style of newspaper display advertisement are among the interesting features that have grown out of a recent general revision of the Southern Pacific's advertising organization and methods.

The expenditure for advertising in the United States exceeds a billion dollars a year, and it is increasing rapidly. Against that vast volume of advertising, railroad advertising is competing for the attention of the public. Moreover, our advertising must compete for attention against the news articles and editorial matter in the magazine or newspaper.

In the first place, then, the advertising must be interesting, to give it what advertising people call "attention value." We cannot do that through mere tricks of typography or illustration. The people of the country have become so sophisticated that any primitive tactics of that sort are futile. If we attempted to use such tricky methods, as were quite common when advertising was not so highly developed as it is today, we would defeat our own purpose and would likely antagonize more people than we would sell. Hence, we must suggest, in pictures and text, the most attractive feature of our message, dramatized and personalized to an extent where we may reasonably expect to catch the rapidly passing eye of the casual reader.

Once we have the reader's attention the real job begins. We have to show him why he should spend his money for our service. The slogan and trademark are usually not enough. By direct statement in some cases and by inference in others, we have to create a desire to buy that service. With pictures and texts he must be shown that he will get his money's worth and more by spending it for railroad transportation.

Advertisements of the New York Central—very "upstage" advertisements portraying the Twentieth Century Limited—have been designed to make the average person feel that the very best people ride on the Twentieth Century Limited, and that anyone who rides on it will add to his prestige. The advertising of the New York Central is very largely based on advertising the Century as a leader. There is no doubt that advertising of that sort, very largely concentrated on one train and building up the prestige of that train, has the effect of building up the prestige of the service as a whole. It has the effect, undoubtedly, of bringing people into New York Central offices when they are thinking of taking a trip, and probably many people so brought into the New York Central offices have purchased a ticket on quite another train than the Century.

Strikingly different is the current campaign of the Pennsylvania, which is running in the national periodicals, such as the Saturday Evening Post. This campaign, while entirely different from the personalized version presented by the New York Central, has for its object the same end as the New York Central's advertising, that is, to build up the prestige of the railroad,

* A portion of this material was presented by Mr. Ingram before a recent meeting of the Pacific Railway Club at San Francisco, Cal.

A Four-Color Cover of a Pictorial Booklet Which the Southern Pacific Offers for Sale

to present the Pennsylvania as a great efficient, powerful transportation machine and as a very human organization striving earnestly to serve the public well.

Now the third example, and entirely different from the first two, is the advertising of the Baltimore & Ohio, which seeks to build up its prestige as the first American railroad, stressing the historical character of the territory it serves, and more particularly, the City of Washington, D. C., as a historical point of tourist appeal.

There may be several ways of doing a very good job of advertising for any commodity or for any service, such as railroad service, but it is usually impossible for a railroad to adopt all of the several ways of directing that advertising without defeating the central, general plan of the advertising campaign. While there are several ways in which a railroad may be well advertised, a good advertiser will usually stick to one central theme. In every railroad organization many good suggestions from friendly sources have to be rejected in order that the advertising money and effort may be concentrated where careful analysis of the whole situation has shown that it will do the most good.

The first piece of advertising material developed by the Southern Pacific for sale to the public was a book of California views. This contained 74 full-page photographic reproductions in black and white of historic and scenic attractions served by Southern Pacific lines in California. It also contained a picture map, done after the manner of ancient cartographers, showing the railroad's principal routes to and through California. The cover design was reproduced in four colors from a painting of a California coast scene in lively impressionistic style and enclosed in spider-web wax paper. Altogether, it made up a piece of merchandise that caught the eye and sold itself quickly to the prospect. The book was offered for sale on the Southern Pacific's chief tourist trains and in booths in stations and ferry boats by the news service, which is operated by the Southern Pacific dining car department. During the last two years 28,000 copies have thus been sold at a net profit to the railroad of several thousand dollars. No restrictions were placed on the sale of the book by outside concerns and an additional 16,000 copies were distributed in that way.

The success of this publication led to the production of a similar book covering the Southern Pacific's Shasta route and over a period of 10 months several thousand copies of that publication have been sold. A Sunset Route view book of the same type is just off the press and the Southern Pacific expects to bring out similar books for the Overland route and Golden State route before the end of this year.

These books are permanent souvenirs and undoubtedly their value to the recipients is enhanced by reason of the fact that money was paid for them. They comprise an important supplement to the free distribution of the railroad's advertising literature, in addition to the consideration of net profit returned to the railroad.

Another piece of advertising, successfully sold by the Southern Pacific, but through quite different methods, is an historical map of the United States, adapted from the style of hand-made maps of medieval times. This shows on the face of it small drawings illustrating the chief attractions for tourists on Southern Pacific's four main routes, with ornamental boxes or cartouches at the top catching the spirit of the pioneer trails followed by the railroad lines, and side borders of cartouches depicting chronologically incidents in the building of the western link of the first transcontinental railroad and its development to date. The map, originally produced to illustrate publication advertisements in the railroad's new centralized national campaign, was finally reproduced in

The Southern Pacific Uses the "Bargain Basement" Style of Advertising to Promote Passenger Traffic

full colors, 32 by 23 in. When varnished and framed it makes an attractive wall decoration—and incidentally an effective permanent piece of institutional advertising copy for the railroad that produced it. It was advertised for sale in teachers' magazines and more generally in connection with advertisements where it was used as an illustration. Thirteen thousand copies have been sold during the last 12 months.

The Southern Pacific is now bringing out a humorous map of California, done with pictures in the old style, which will be sold in much the same way. It is of value from an advertising standpoint chiefly because it shows clearly the relation of the railroad's lines to the chief points of interest to travelers in California. It also shows the gateways through which Southern Pacific's through routes enter the state.

It will be noted that the success of the various pieces of advertising matter that have been sold were of a pictorial nature. The same thought has been followed through in a thorough revision of the advertising booklets put out by the railroad for free distribution. Text has been held to a minimum and pictures used as far as possible to tell the story.

This theory has been carried to the ultimate conclusion in the standard folder "California for the Tourist". Formerly this booklet contained a great deal of descriptive matter. It comprised 32 pages. It has now been

cut to half that size, 16 pages, and may be considered unique in that it contains no text, only photographic reproductions and maps with captions. Two maps are included. One is a small reproduction of the old-style map of the United States before mentioned with caption indicating how the traveler may go to California via Southern Pacific, and the other is a small reproduction of the California humorous map showing the traveler how to see California via Southern Pacific lines after he gets there. All of the essentials of the railroad's advertising message are apparently incorporated in the smaller size booklet.

The same theory has been the basis of the revision of other booklets and of the production of new ones, although it could not be carried as far as in the case of California, whose attractions are so well known they hardly need be delineated in text.

New Phases of Newspaper and Publication Advertising Developed

In addition to the new methods introduced in the production of its advertising literature, several new phases of publication advertising in magazines and newspapers have been developed recently by the Southern Pacific. Important in creating the background of the service is the national campaign which appears in such periodicals as the Saturday Evening Post and the Literary Digest, in which a picture is presented of the through service as a whole. A map, done in old-style, with pictures, as is now the vogue, lends the essential interest to the latest Southern Pacific advertisements. An ordinary railroad map, it can readily be seen, does not hold as much interest as a map which not only gives a picture of the chief through routes, but also presents an institutional message as to the building of the railroad.

An advertisement, entitled, "Straight to the Land of Gold Leads the Overland Train of '49", deals with the building of the Central Pacific and its connection with the Union Pacific to form the first transcontinental railroad, and brings in the essential selling message, telling about the four routes for transcontinental travel and giving some indication of the scenic attractions along the way. Another advertisement, "Follow the Longhorn Trail" catches the reader's interest with dramatized pictures of the old longhorn cattle trail that ran from El Paso to Kansas City.

Another series reverts to the established practice of advertising the scenic attractions with a direct appeal in the headline "Low Fares West This Summer", and an appeal to the pocketbook. It is hard to conceive a stronger appeal than that. In all such advertisements, the appeal of train service has been included because times have changed and many people are making even transcontinental trips by automobile and by airplane and it is necessary to picture, in as delightful a way as possible, the best features of travel by train.

The advertising in the national magazines is followed up by localized advertising in newspapers and local magazines, both in the East and on the Pacific Coast. A series of travel-by-train advertisements delineate the competitive features and attractions of train travel as compared with highway travel, using such phrases as "Go Comfortably by Train and Save Time," "Rest, Relax, Go by Train," "Sleep as You Ride" and "Save Time, Ride in Comfort." These will, day after day, have the effect of keeping in the public mind the value of traveling by train as compared with using one's own car.

Another new phase of publication advertising, incidental in the general plan but which may prove important locally, is the adaptation of the department store style of advertisement at principal Southern Pacific points where many phases of service and fares must be kept constantly before the public. Abandoning the plan of covering these with separate advertising, the Southern Pacific a few months ago began running a new type of advertisement, combining nearly all of the individual ads in one advertisement under the heading "Southern Pacific News and Travel Bargains".

Special excursions and special reduced round trip fares are advertised just the same as a department store advertises the things it sells, in a sensational style. Artistically, they are not very attractive ads because they have only the pocket book appeal. It is a direct attack. The Southern Pacific in California is in much the same position as that of a department store. A wide variety of things is offered for sale. It is almost impossible to even "high-spot" them in separate ads. Some leader is head-lined, such as: "Fares cut for three-day holiday", and carries a brief summary of the service in general. These ads are made up in large size to command attention. The most timely item of service or fares is featured in the main headline and illustration and others are presented with illustrations and brief lively text in the body of the advertisement.

This plan, of course, means fewer insertions because of the larger size of the ads. While this new feature has not been in use long enough to thoroughly prove its effectiveness as yet, its first result has been to attract a considerable amount of attention and favorable comment.

The success of our business, so far as transcontinental travel is concerned, very largely involves the co-operation of other railroads. From time to time, circulars are sent to the ticket agents of other railroads in the Middle West and East, telling about new features of the service and new scenic and recreational attractions. Even ticket agents are human beings and are susceptible to the same influences that affect other persons, and so these circulars are made just as interesting as those sent to the general public by using color and all of those things that are designed to reach the popular mind.

During the last few years increasing attention has been given by this railroad to the creation of advertising of a lively, interesting nature. The traffic officers not only regard this as important as a primary consideration in getting business, but also as reflecting to the public the progressive character of the railroad itself.

* * *

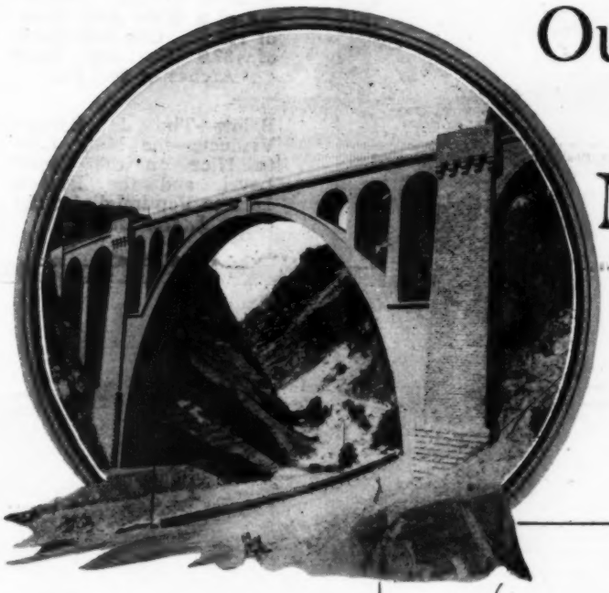
Passenger Train on the New Haven

Beautiful Bridges

Outstanding Feature of the Nice-Coni Railway

New international line 63 miles cost $450,000 per mile. Unusual engineering problems involved

By F. C. Livingston



The Bridge at Scarassoni

BRIDGES of remarkable beauty and several long tunnels are the oustanding features of a railway extending from Nice, France, to Coni, Italy, with a branch to Ventimiglia, Italy, which was opened on October 30, 1928, with appropriate ceremonies. The official opening took place at the international station of Breil, on the French side of the Italo-French frontier, the ceremony being performed by representatives of the French and Italian Governments, including Monsieur Tardieu, the French minister of Public Works. The new railway is approximately sixty-three miles in length, of which total about thirty-nine miles are situated on French territory. Its construction presented a large number of serious engineering problems owing to the fact that the line extends through extremely mountainous territory for its entire length.

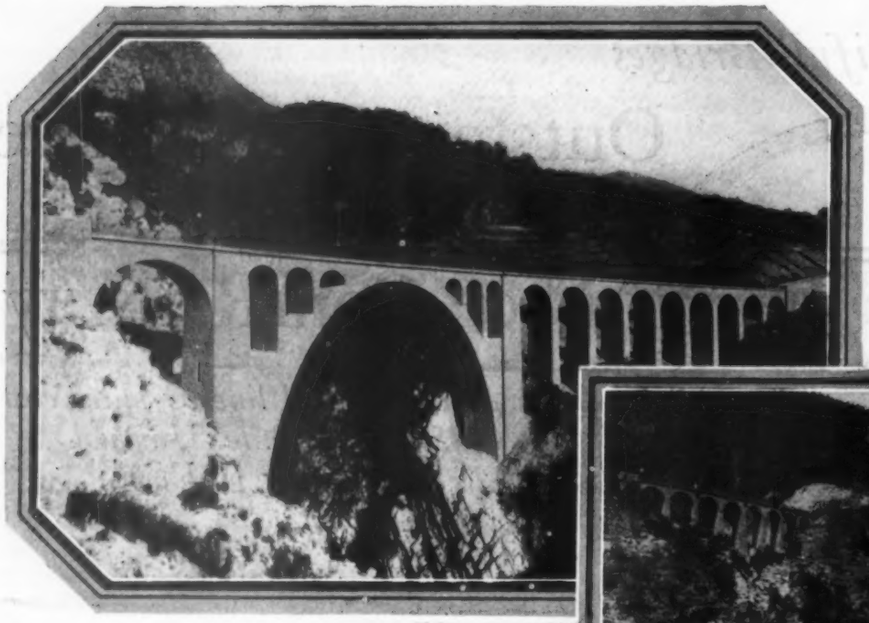
Map of the Nice-Coni Railway

Prior to the construction of the new line there was no direct rail connection between Southern France and Northern Italy with the exception of the northern line from Lyons to Turin and the coast line from Marseilles to Genoa, via the Mediterranean coast. Neither of these existing lines provides a direct line from Turin, Milan and the important towns in the plains of Lombardy to the south coast of France and the western section of the Italian Riviera, the only route to these places being a long detour via Savona.

The need for such a direct link led to an investigation by the Italian government into the possibility of the extension of the existing line from Coni to Col de Tenda, (which was opened to traffic in 1900) as far as Ventimiglia on the Mediterranean at the mouth of the Roya river. It was soon discovered during these investigations that the only feasible and economically practicable route for this extension would be through the communes of Fontan, Saorge and Breil, in the French Department of the Alpes-Maritimes. It was readily realized that the French government would never countenance such an anomaly as three French communes being served only by an Italian railway which had no direct link with any French line.

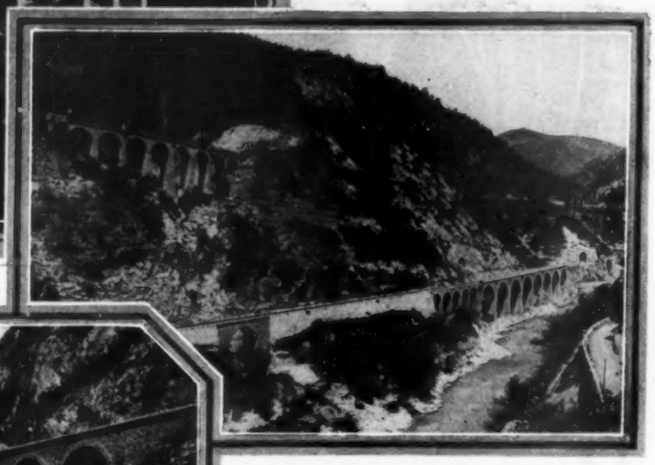
Fortunately, there had been a movement in Nice for a considerable time to secure better rail communication with Northern Italy, especially with Piedmont and other parts of the hinterland, and the opportunity was taken to hold an international conference on the subject of linking Nice with the proposed line from Coni to Ventimiglia. As a result of this conference an agreement was signed between the two countries in 1904, under which both governments agreed to construct, each in its own territory, a railway line linking up the two towns via Sospel, while another line, which was to leave the main line at Breil, would prolong the railway to Ventimiglia. It is these lines which have now been completed, 24 years after their construction was first authorized.

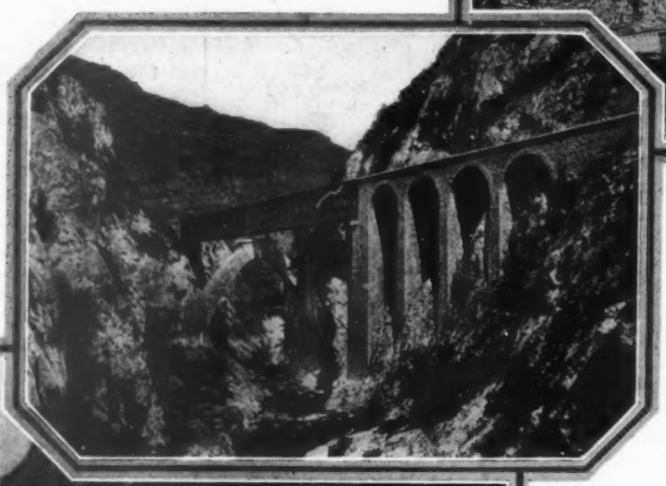
The Nice terminus of the railway is the Gare St. Roch, from which the line ascends the valley of the Paillon river as far as the village of l'Escarene, over which it passes on a viaduct of eleven arches. From l'Escarene the line passes under the Col de Braus in a



At the Left—The Embossiera Viaduct, Consisting of a Main Arch Span of 118 Ft., One Side Arch of 32.8 Ft. and Nine Arches of 26.3 Ft.

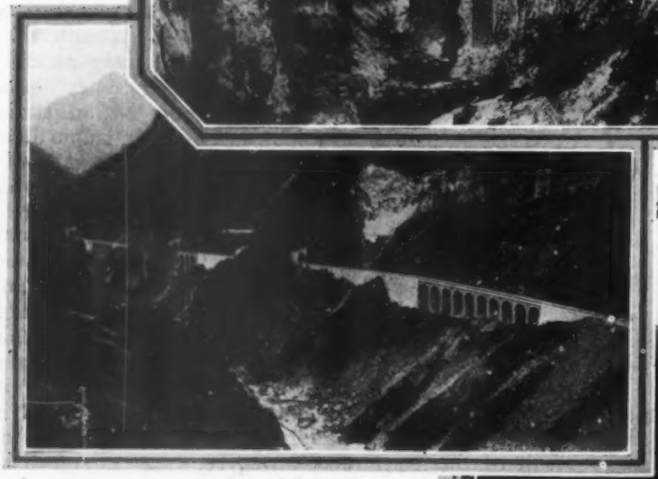
Below—The de Bancao Viaducts—the Main Line to Nice on the Upper Level, and the Branch Line to Ventimiglia on the Lower Level

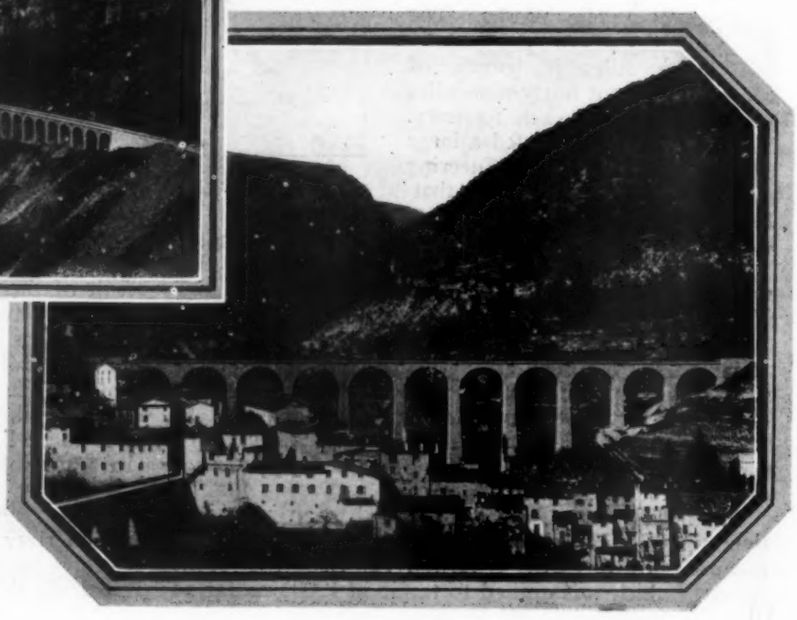




At the Left—The Bevera Bridge in Which the Intermediate Support for Two 148-Ft. Truss Spans Consists of a Transverse Masonry Arch of 82-Ft. Span.

Below — The Viaduct at L'Escarene Consisting of 11 Arches of 49-Ft. Span





Above—A View of the Line on the Ascent to Fontan, Resort Being Had to Solid and Arched Viaduct Construction to Avoid Disturbance of the Unstable Mountain Side

tunnel nearly 3¾ miles in length and then traverses the picturesque Vale of Sospel, a popular tourist center. In a tunnel approximately 2¼ miles long, the railway then passes under Mont Grazian, at the northern end of which tunnel it opens out into the valley of the Roya river where the international station and junction of Breil is located. From this point the branch line was built to Ventimiglia, a distance of approximately fourteen miles to the south. From Breil the main line follows the valley of the Roya northward in the direction of Fontan and Saorge, which are served by a joint station. After leaving Fontan-Saorge the line was constructed in the form of a loop to develop distance for the sharp ascent to the frontier where the French section of the railway joins the portion which had been constructed by the Italian State Railways. The maximum gradient on the line is 2.5 per cent while the maximum rate of curvature is slightly under 6 deg.

Exceptional Engineering Problems

The construction of the French portion of the new railway was undertaken throughout by the Paris, Lyons & Mediterranean railway, and involved many exceptional engineering problems. Owing to the rugged character of the mountains in the Alpes-Maritimes, it was necessary to construct no less than 45 tunnels, with a total length of 14¾ miles, nearly a quarter of the whole mileage. Of these, the longest is that under the Col de Braus (3¾ miles). In addition, the numerous ravines and deep valleys which abound throughout the territory traversed called for a large number of bridges and viaducts, many of which are of unusual interest, as they involved exceptional forms of construction.

Ingenious Plan for Brevera Crossing

Among the most remarkable of the bridges is a sharp skew crossing of the steep narrow gorge of the Brevera river where an ingenious plan was adopted to meet a difficult situation. The opening between the bridge seats of the two tall stone masonry abutments is about 300 ft. and as the location was unfavorable for the construction of a span of this length an intermediate pier was desirable, but such a pier would have almost completely blocked the waterway. The solution of this problem consisted of a variation of that employed in the "Hanging Bridge" on the Denver & Rio Grande Western in the Royal gorge, but instead of the overhead A-frame, the intermediate support consists of an arch rib, approximately parabolic, spanning between the walls of the gorge at right angles to the center line of the bridge. The arch has a span of 82 ft., a height of 49 ft. and is 10½ ft. thick at the base. It is surmounted by a bridge seat which supports two lattice steel trusses 147 ft. 8 in. long.

The Saorge Bridge

Another interesting structure is the Saorge bridge, which spans the River Roya at a height of 197 ft. and has an arch with an opening of 131 ft. 3 in., while another remarkable crossing of the same river is the Scarassoni bridge near the frontier. This consists of a main span comprising an open-spandrel arch of 160-ft. span with its crown 148 ft. above the stream. It is flanked by approaches embodying arches of 42½-ft. span.

Many of the difficulties which confronted the engineers in the construction of the Nice-Coni line must be ascribed to the unstable rock formation of the Alpes-Maritimes. This is largely of a chalky nature in distorted and faulted stratification. In some cases the strata stand almost vertical or lean toward the valley so that loss of support through excavation could easily have resulted in great slides. As a result, large expenditures were made for retaining walls, while on some mountain slope where ordinary practice would call for side hill cuts it was deemed unsafe to disturb the slope by excavation and the line was supported on solid or arched masonry viaducts.

In addition it was found that the water from many underground water pockets which occur in the French and Italian Alps caused the rapid disintegration of the mortar used in the masonry of tunnels and retaining walls, and special steps had to be taken to prevent this water from reaching the mortar. The large amount of special construction which has thus been necessary throughout the whole length of the line has naturally had a marked effect on the cost of construction, which amounted to nearly $450,000 per mile.

Apart from the value of the new line from an economic standpoint, it will also tend to foster a very considerable tourist traffic. Hitherto there has been little opportunity for the visitor to the Mediterranean coast to penetrate into the interior of the Alpes-Maritimes and the adjoining provinces of Italy except by the comparatively slow motor coach service. With the coming of the new railway, however, a more rapid route has been opened which abounds in picturesque scenery and new playgrounds.

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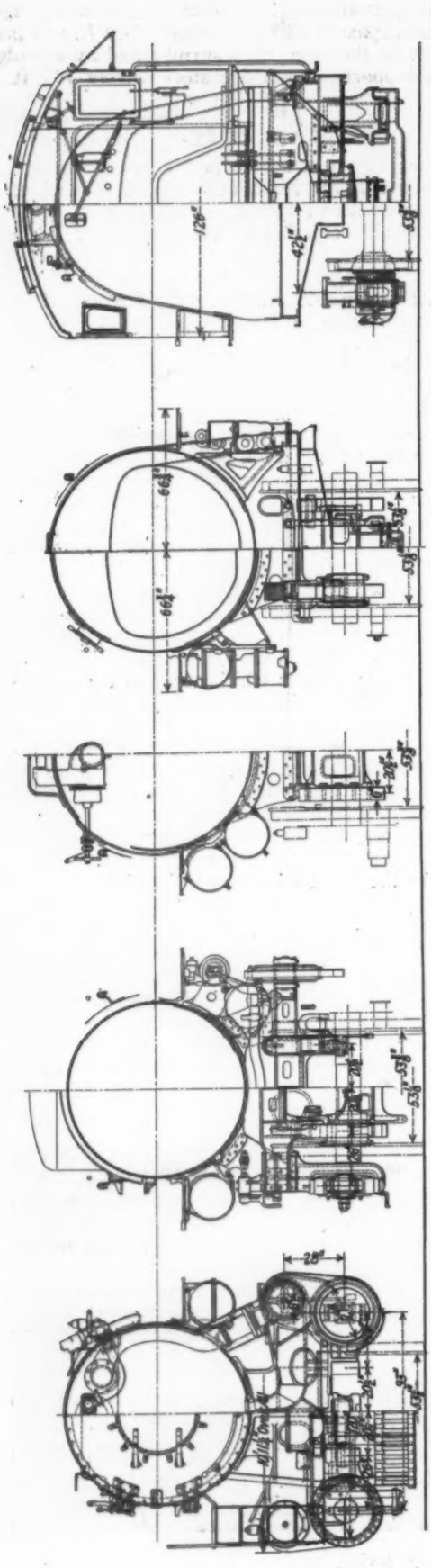
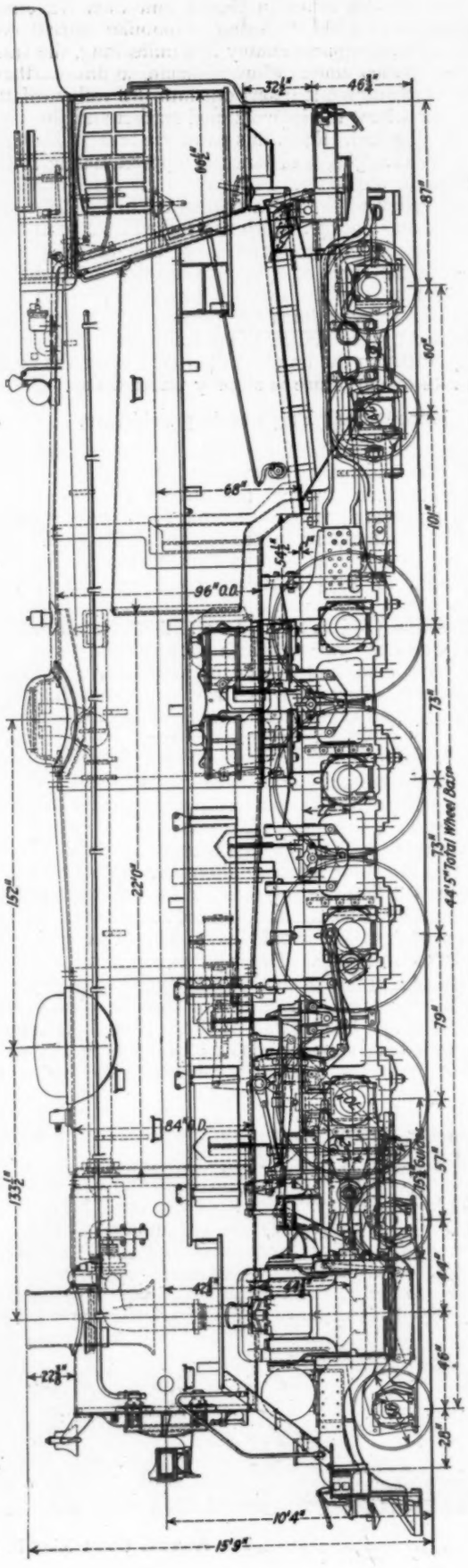
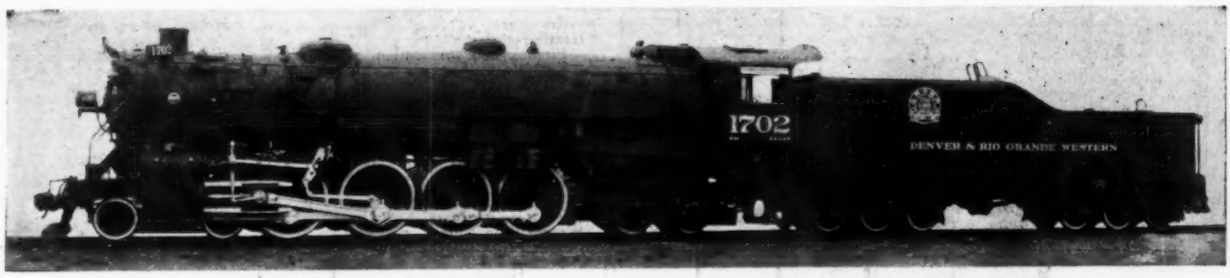
The Atlantic Coast Line in Russell Street, Fayetteville, N. C.





Cross Section and Elevation Drawings of the Denver & Ri o Grande Western 4-8-4 Type Locomotive



Denver & Rio Grande Western 4-8-4 Type Locomotive Built by the Baldwin Locomotive Works

D. & R. G. W. Buys Ten 4-8-4 Type Locomotives

Purchased for passenger service between Denver and Salt Lake City—Tractive force 63,700 lb.

THE Baldwin Locomotive Works recently completed the delivery of ten 4-8-4 type locomotives to the Denver & Rio Grande Western for use in passenger service between Denver, Col., and Salt Lake City. Utah. These locomotives develop a tractive force of 63,700 lb. They have 27-in. by 30-in. cylinders, 70-in. drivers, and operate at a boiler pressure of 240 lb. The total weight carried on the drivers is 264,900 lb., which, divided by the tractive force, gives a factor of adhesion of 4.16.

The new 4-8-4 type locomotives were purchased by the D. & R. G. W. on account of a shortage of passenger power, and this particular type and size was decided upon in order to provide sufficient capacity to insure the maintenance of passenger train schedules over the unusually heavy grades between Denver & Salt Lake City. A brief description of the profile over which these locomotives are being operated was published in the September 3, 1927, *Railway Age*, page 435, in connection with an article describing ten single-expansion articulated 2-8-8-2 type locomotives ordered for freight service. A ruling grade of 3.33 per cent, with a maximum curvature of 16 deg.. located between Minturn, Col., and the Continental Divide at Tennessee Pass, provides one of the difficulties in operating passenger trains between Denver and Salt Lake City. Other grades of 3 per cent, with a maximum curvature of 12 deg., and 2.4 per cent, with a 9-deg. curvature, are encountered. The new passenger locomotives were purchased with the expectation of reducing the running time over this line.

Two of the through trains between Denver and Salt Lake City are now operating on a schedule one hour shorter than that formerly in effect. The present schedule is now approximately 25 hours between Denver and Salt Lake City. While the railroad has not yet made any official tests, the performance of these locomotives, from the standpoint of coal and water consumption, has proved to be satisfactory in a number of breaking-in runs which were made shortly after the delivery of the first locomotives of the order.

Results of Breaking-In Trips

A number of breaking-in trips in both passenger and freight service were made over various portions of the line between Denver and Salt Lake City to ascertain the performance of the new power. Records of the fuel consumption were made on several of the tests, the results of which are shown in one of the tables.

These locomotives can handle trains up to 15 passenger cars from Denver to Grand Junction, Col., a distance of 450 miles, on 20 tons of coal, and to Salt Lake City with from 35 to 38 tons of coal. It is expected that complete road tests will be made in the near future.

The Design and Construction

The new Denver & Rio Grande Western 4-8-4 type locomotives are designed to traverse curves of 21 deg. and to negotiate grades up to 3.3 per cent, with the type of trains used in through passenger service. The principal dimensions, weights and proportions of these locomo-

Performance Record of the Denver & Rio Grande Western 4-8-4 Type Locomotives Taken on Several Trial Trips

Service	Average speed, m.p.h.	Tonnage behind tender	No. of cars in train	Coal per car-mile, lb.	Distance, Miles	Stations From	Stations To	G. T. M. per hour
Freight	19.6	1,655	....	85.7*	50	Burnham, Denver	Palmer Lake	34,400
Freight	23	1,394	....	....	23	Colorado Springs	Palmer Lake	32,050
Freight	27.6	1,250	....	....	23	Colorado Springs	Palmer Lake	34,500
Passenger	31.8	....	12	9.8	215	Denver	Salida	.....
Passenger	30.7	....	10	9.1	745	Denver	Salt Lake City	.....
Passenger	30.7	....	10	8.76	745	Denver	Salt Lake City	.....
Passenger	30.7	....	11	7.8	215	Denver	Salida	.....
Passenger	50	....	11	....	92.4	Butte	Denver	.....
Passenger	38.8	....	14	....	95	Pueblo	Salida	.....
Passenger	30.8	....	16	....	95	Pueblo	Salida	.....

* Coal per thousand gross ton-miles.

Front View of One of the New 4-8-4 Type Locomotives

tives are shown in one of the tables. Steam distribution to the cylinders is controlled by 14-in. valves, operated by a Walschaert valve gear having a maximum travel of 7 in., lap of 1¼ in., and an exhaust clearance of ⅛ in. The lead in full gear is zero, but increases to ⅜ in. at 25 per cent cut-off. This variation in lead is obtained primarily by changing the length of the short arm of the combination lever, with the change in cut-off.

Referring to the arrangement of the valve gear as shown on the elevation drawing, it will be observed that a bell crank and connecting link have been introduced between the radius rod and combination lever. Provision has been made in the construction of the combination lever to vary the distance, center to center, between the pin connection to the valve stem and the pin connecting the lever to the radius rod, from a maximum of 3⅞ in. to a minimum of 2⅞ in. This variation in distance affects the length of the lap and lead travel of the valve.

Table of Dimensions, Weights and Proportions of the Denver & Rio Grande Western 4-8-4 Type Locomotives

Railroad	D. & R. G. W.
Builder	Baldwin
Type of locomotive	4-8-4
Service	Passenger
Cylinders, diameter and stroke	27 in. by 30 in.
Valve gear, type	Walschaert
Valves, piston type, size	14 in.
Maximum travel	7 in.
Outside lap	1¼ in.
Exhaust clearance	⅛ in.
Lead in full gear	zero
Lead at 25 per cent cut-off	⅜ in.
Weights in working order:	
On drivers	264,900 lb.
On trailing truck	87,300 lb.
On front truck	65,950 lb.
Total engine	418,150 lb.
Total engine and tender	696,750 lb.
Wheel bases:	
Driving	18 ft. 9 in.
Rigid	12 ft. 2 in.
Total engine	44 ft. 5 in.
Total engine and tender	89 ft. 9 in.
Wheels, diameter outside tires:	
Driving	70 in.
Front truck	36 in.
Trailing truck	42 in.
Journals, diameter and length:	
Driving, main	13 in. by 15 in.
Driving, others	11½ in. by 15 in.
Front truck	7 in. by 14 in.
Trailing truck	9 in. by 16 in.
Boiler:	
Type	Conical
Steam pressure	240 lb.
Fuel, kind	Soft coal
Diameter, first ring, outside	84 in.
Firebox, length and width	132⅛ in. by 96¼ in.
Combustion chamber, length	42 in.
Tubes, number and diameter	43—2¼ in.
Flues, number and diameter	195—3½ in.
Length over tube sheets	22 ft.
Grate area	88 sq. ft.
Heating surfaces:	
Firebox and combustion chamber	343 sq. ft.
Thermic syphons	103 sq. ft.
Tubes and flues	4,471 sq. ft.
Total evaporative	4,917 sq. ft.
Superheating	2,229 sq. ft.
Comb. evaporative and superheating	7,146 sq. ft.
Tender:	
Water capacity	14,000 gal.
Fuel capacity	20 tons
Wheels, diameter outside tires	36 in.
Journals, diameter and length	6 in. by 11 in.
Rated tractive force	63,700 lb.
Weight proportions:	
Weight on drivers ÷ total engine weight, per cent	63.3
Weight on drivers ÷ tractive force	4.16
Total weight engine ÷ comb. heating surface	58.75
Boiler proportions:	
Tractive force ÷ comb. heat. surface	8.94
Tractive force × dia. drivers ÷ comb. heating surface	625
Firebox heating surface ÷ grate area	3.9
Firebox heating surface, per cent of evap. heating surface	6.98

The Feedwater Heaters

The locomotives are equipped with Elesco feedwater heaters, which are located under the smokebox and in front of the cylinder saddles. Superheated steam is used to operate the feedwater pump, Standard stoker, headlight generator, blower and two 8½-in. cross-compound air compressors. In addition to the special equipment mentioned, these locomotives have Type E superheaters and Alco power reverse gears. The cylinders and tender frames are cast steel. The piston rods, main rods and side rods are of carbon-vanadium steel. Floating bushings are applied on all crank pins, including the main-rod back ends. The main drivers are cross-balanced. Hunt-Spiller gun iron is applied as a complete installation to the wearing parts of the cylinders and valves.

The tender is of water-leg construction, having a capacity for 20 tons of coal and 14,000 gal. of water. It is carried on two six-wheeled trucks of cast-steel frame construction. The total loaded weight of the tender is 278,600 lb.

* * *

A Freight Train on the Seaboard Air Line

Saving a Million Dollars in Car Hire

Illinois Central shows economies by careful attention to home routes on foreign cars

By R. B. Aylward

General car distributor, Illinois Central

BECAUSE the Illinois Central is an originating line and serves only a limited number of receiving industries, we normally have a daily reclaim debit of $4,000 and, in addition, a daily private line mileage debit of $7,000 because of the large number of privately owned cars handled. During the year 1927, the monthly increase in our car hire debit became so alarming that an extensive survey was made of the situation and after carefully analyzing the various phases of our operation, it was decided to make some changes in our car distribution practices and also to revise our home route system.

As a result, in 1928, we effected a saving of $1,007,362 in car hire, with a decrease of 4.1 per cent in empty car mileage, which was brought about by a number of factors. In the first place, a table was compiled estimating the monthly ownership; cars on line, separated as between system, foreign and private; cars loaded and cars received loaded from connecting lines; and car hire allowances, after which another table was compiled showing the permissible number of cars on each division monthly in order to accomplish the car hire goal. At the close of each month a statement was compiled comparing the actual cars on line and loads handled, with the estimates, the superintendents being required to explain excess cars on hand in the event they failed to show a corresponding increase in traffic handled. This report resulted in considerable activity on the part of superintendents, trainmasters, chief dispatchers and others concerned, which, in turn, materially accelerated the movement of equipment, particularly foreign cars.

A New Home Route Plan

As a further step, on February 1, 1928, we discontinued the practice which provided for a home route card accompanying each foreign car while in our possession, and adopted the system applying empty car waybills only to foreign cars that were not required for loading.

The details of the revised home route plan were as follows: Effective February 1, 1928, disposition for foreign cars was requested from the home route bureau by chief dispatchers only, utilizing a special telegraphic car disposition report. Agents and others were instructed to discontinue wiring the car accountant for home routes of foreign cars, and instead, were asked to report all cars to their respective chief dispatchers for disposition.

Empty foreign cars are not accepted from connections, unless via the same route to us, or unless they are delivered under special instructions or on specific orders for return loading. Such cars as may be delivered to us in error are reported promptly to the delivering line for disposition in accordance with the per diem rules or existing local agreements.

R. B. Aylward

Empty cars offered for movement to owners under CS Rule 4 are not accepted without authority from the superintendent of transportation. These cars move on empty car bills instead of revenue billing and the superintendent of transportation is advised of such movements, so that proper bills are made against the railroad requesting the service.

Special care is exercised by all junction agents to guard against accepting in home routes, cars belonging to an indirect connection with which the road offering the car has a direct connection. Such cars are refused in accordance with CS Rule 2-E. This does not apply to cars handled in switch service where the owner is not a direct connection in that switching territory, and such cars are accepted empty, if previously delivered loaded in accordance with CS Rule 2-F.

To assist in determining whether indirect connection foreign cars should be accepted from the roads offering them on record rights, a statement was supplied to all chief dispatchers, showing the principal trunk lines which connect with our direct connections and agents at junction points were also supplied with this information. The chief dispatchers also received a revised list of various ownerships of cars which are considered "home" on our direct connections. This information is of assistance to the chief dispatchers, when such cars can be disposed of to the owners within the radius specified. The chief dispatchers report to the superintendent of transportation immediately, on the telegraphic form, all foreign cars on which disposition is required, in order that advice may be given while same are being loaded.

If a car is ordered billed to a certain road for movement to the owners on a reciprocal basis, the word "Reciprocal" is written in the space of bill captioned "On Record Of," and, likewise, if a car is ordered to a road at a junction other than the junction via which it routes home, this information is shown in the same space on the empty car bill. The caption "Billed From" is filled in by using station stamp or ink. All bills covering foreign cars, which have served their purpose, are mailed to the superintendent of transportation, in order that the matter may be handled with any employees who fail properly and completely to fill out the empty car bill as per instructions.

The chief dispatchers report to the superintendent of transportation, by special wire, any failure on the part of connections to accept cars promptly home routing to them and caution the agents and others to comply strictly with the per diem rules on all such cars, thereby permitting us to reclaim for the time held.

Regulations

The detailed regulations under which the home route plan is operated are as follows:

1. Every foreign car not required for loading or connecting line orders, and not covered by instructions from the general superintend-

ent or superintendent of transportation, except equipment received under load in switch service and cars owned by direct connections, which can be disposed of within a radius of 300 miles, shall be reported on the telegraphic car disposition report for disposition.

2. Cars owned by direct connections (Rule CS 2) which can be disposed of under the car service rules to roads from which they were last received, loaded more economically than by sending to the owners within the above radius, shall be billed accordingly.

3. Foreign cars received under load in switch service, if not required, shall be returned to delivering road, or owner, if a direct connection at the junction where they are located, in accordance with car service rules or existing local agreements.

4. Box cars reported for disposition shall be classified as "A," "B" or "C" class.

5. Information as to the junction point at which the car was received, the delivering line and the date, secured from the revenue billing must be shown on all cars received under load during the past seven days.

6. Reports from each division or district shall be numbered consecutively, starting with the first of each month.

7. Code letters must be used in transmitting report by telegraph.

8. If the answer to the telegraphic car disposition report indicates no record, the chief dispatcher shall immediately verify the initials and number and obtain the train reference, handling with the superintendent of transportation by special wire.

How the Plan Worked

After a week's operation of the revised home route system, we found it necessary to extend the 300-mile radius in order to meet local operating conditions. For example, the Memphis Terminal division was authorized to send home surplus cars belonging to direct connections at Louisville, Ky., a distance of approximately 400 miles.

To expedite further the disposition of foreign cars and to reduce telegraphic and clerical expense, on February 17, each chief dispatcher was furnished with a statement showing all of our direct connections and the nearest home junctions from their respective headquarters, which statement authorized sending home various direct connection cars without the necessity of securing home route data, provided the inbound billing showed cars were received from owner, or a connection to which the car was returnable under Car Service Rule "E," such cars to be disposed of via the most economical junction point.

Short Routing Brings Results

The short routing of equipment was materially increased with beneficial results. For example: A Denver & Rio Grande Western car was reported by Fort Dodge, Ia., for disposition and our home route showed that the car belonged to the Michigan Central at Chicago. The home route bureau ascertained the Michigan Central home route which showed that the car belonged to the Chicago & North Western at Chicago, subsequent handling with the Chicago & North Western showed their home route as the Chicago, Burlington & Quincy at Des Moines, Ia., all of which information would be obtained within a 24-hr. period; thereby enabling us to deliver the car to the Chicago & North Western at a nearby junction in Iowa for handling to Des Moines. This resulted in a material saving in empty car mileage and car hire expense to the Chicago & North Western and to our line, to say nothing of eliminating a long, circuitous movement to the owners if the car had been handled in accordance with the service route. In fact, in a number of instances the short routing of equipment has permitted disposing of cars at the junctions where they were located, entirely eliminating the empty mileage and car hire expense on our line, as well as benefiting several intermediate carriers.

Reciprocal Agreements

Reciprocal trading agreements were entered into with a large number of our connections, it being our policy to handle only foreign cars on that basis, when they could be disposed of more economically in this manner than by returning such cars to the owners direct or via the service route.

For example: A Union Pacific car was received under load from the Missouri & Northern Arkansas at Helena, Ark., destined to Memphis, Tenn. When the car was released and we had no suitable loading for it, it was our obligation to return the car to the owners because we are a direct connection, while the delivering road is an indi-

Table I. Maximum Permissible Number of Cars on Hand Daily on Each Division Each Month of 1929 to Accomplish Desired Results in Net Car Hire Debit

Division	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Chicago Terminal	7889	7800	8400	8400	8900	9000	9000	8400	7350	6900	7400	7500
Illinois	2502	2325	2300	2500	2575	2800	3000	2900	3200	3100	2700	2700
St. Louis	9510	9500	9100	8800	8500	8600	8150	3200	8000	8000	6700	6600
E. St. Louis	1985	2275	2200	1700	1700	1975	1900	1800	1800	1600	2000	3500
Springfield	2779	2695	2875	2800	2400	2400	2700	2900	3100	2800	2600	2600
Indiana	3402	3400	3425	3400	3400	3400	3500	3800	3900	3800	3600	3500
Northern Divisions	28067	27995	28300	27600	27475	28175	28250	28000	27350	26200	25000	26400
Wisconsin	2673	2725	2725	2775	2800	2950	3000	3300	3400	3400	2900	2700
Minnesota	1597	1550	1550	1550	1500	1550	1575	1650	1675	1600	1500	1500
Iowa	2179	2175	2175	2225	2250	2500	2850	2900	2600	2300	2250	2100
Western Divisions	6449	6450	6450	6550	6550	7000	7425	7850	7675	7300	6650	6300
Kentucky	6397	6400	6200	6800	6800	6800	6400	6200	5800	6100	6500	6300
Tennessee	2518	2425	2500	3100	3000	2735	2800	2600	2800	2900	2900	3100
Mississippi	1575	1500	1500	1500	1500	1500	1450	1450	1400	1500	1500	1600
G. & S. I.	1700	1775	1775	1650	1550	1525	1400	1350	1500	1500	1600	1700
Louisiana	3197	3300	3400	3850	3850	3850	3500	3300	3600	3800	3600	4000
N. O. Terminal	3386	3300	3000	3275	3100	2375	2500	2500	2400	2700	3000	3700
Southern Divisions	18773	18700	18375	20175	19800	18785	18050	17400	17500	18500	19100	20400
Memphis T.	4151	4150	4400	4675	4550	4550	4400	4100	4700	5100	5200	5300
Memphis Division	1400	1400	1300	1225	1300	1300	1300	1300	1600	1800	1700	1650
Greenville	1075	1075	980	980	925	925	850	775	1100	1200	1150	1400
Vix. Rte.	2400	2400	2400	2400	2200	2100	2200	2200	2400	2600	2500	2300
N. O. Division	2200	2100	1985	2300	2250	1950	1800	1600	1500	1700	2100	2200
Y. & M. V. Divisions	11226	11125	11065	11580	11225	10825	10550	9975	11300	12400	12650	12850
Total	64515	64270	64190	65905	65050	64875	64275	63225	63825	64400	63400	65950

Table 2. Car Handling Statistics

		Cars On Line	Unserviceable Cars on Line	Serviceable Cars on Line	Cars Loaded and Rec'd. Loaded	Car Days Per Load	Loaded Car Mileage	Empty Car Mileage	Total Car Mileage	Car Hire
January	1928	65,611	5758	59,853	223,065	9.1	51,000,675	32,480,303	83,480,978	$105,327
	1927	69,040	5882	63,158	233,745	9.2	52,497,213	33,459,905	85,957,118	237,017
February	1928	66,228	6795	59,433	222,199	8.5	50,231,522	31,339,755	81,571,277	124,574
	1927	70,301	6682	63,619	227,023	8.6	50,803,182	31,328,380	82,131,562	256,561
March	1928	65,969	7574	58,395	253,173	8.0	58,127,354	34,604,341	92,731,695	153,667
	1927	69,975	7860	62,115	257,120	8.6	57,376,693	34,136,927	91,513,620	286,854
April	1928	67,601	7953	59,648	214,017	9.4	51,109,280	32,712,000	83,821,280	222,799
	1927	69,049	11208	57,847	212,162	9.8	51,307,791	30,283,777	81,591,568	261,409
May	1928	66,547	8582	57,965	225,264	9.1	52,468,596	31,723,327	84,191,923	198,320
	1927	70,674	13075	57,599	221,436	9.8	56,457,726	34,232,427	90,690,153	320,751
June	1928	66,189	9352	56,837	214,651	9.2	50,523,614	31,330,619	81,854,233	200,557
	1927	69,530	10623	58,907	228,084	9.0	55,571,281	36,543,891	92,115,172	277,843
July	1928	65,686	8991	56,695	219,259	9.2	50,700,620	31,285,994	81,986,614	193,619
	1927	69,994	9379	60,615	230,417	9.8	53,555,727	34,343,227	87,898,954	295,570
August	1928	64,592	7575	57,077	241,491	8.2	52,500,853	30,638,763	83,139,616	148,232
	1927	69,692	8249	61,443	258,063	8.4	56,464,078	33,155,498	89,619,576	270,629
September	1928	64,940	5487	61,453	251,053	7.8	54,388,343	29,727,240	84,115,583	157,239
	1927	71,394	7812	63,582	264,424	8.1	56,749,673	31,784,386	88,534,059	379,423
October	1928	66,143	4821	61,322	278,404	7.3	58,903,937	33,067,581	91,971,518	201,635
	1927	71,787	7507	64,280	272,000	8.1	59,640,168	35,541,615	95,181,783	393,321
November	1928	65,253	4305	60,948	245,250	8.0	52,918,544	34,375,477	87,294,021	181,793
	1927	67,352	7845	59,507	232,056	8.7	49,223,009	36,054,847	85,277,856	61,959
December	1928	67,102	4070	63,032	227,161	9.1	50,922,250	36,232,725	87,154,975	261,333
	1927	66,124	6178	59,946	216,338	9.6	48,535,251	35,248,015	83,783,266	94,120
Total	1928	65,987	6768	59,219	2,814,987		633,795,588	389,518,125	1023,313,713	2,148,095
	1927	69,575	8524	61,051	2,852,868		648,181,792	406,112,895	1054,294,687	3,155,457
Increase		5.2	20.6	3.0	1.3		2.2	4.1	2.9	31.9
% Decrease		3588	1756	1832	37881		14,386,204	16,594,770	30,980,974	1,007,362

rect connection. Therefore, this car was delivered to the St. Louis-San Francisco at Memphis on a reciprocal trading basis for delivery to the owner at Kansas City, Mo., and we assumed 484 empty miles, instead of handling the car to the owners at Council Bluffs, Ia., a distance of 950 miles.

Factors in Reciprocal Trading

In disposing of equipment on reciprocal trading bases, we take into consideration the following factors:

Mileage in direction of heavy traffic at two cents per mile.

Mileage in direction of light traffic at one cent per mile.

Per diem expense of $1 per 100 miles or fraction thereof, figuring cars will normally move one operating district daily, which is approximately 100 miles.

Switching and per diem expense at terminals where cars are disposed of via intermediate switching carriers.

The home route bureau maintains a monthly mileage record by individual cars, covering cars delivered to and received from connections under the reciprocal trading arrangement, each road verifying the monthly mileage statements before the mileage is taken into the cumulative accounts. We reimburse our connections by handling foreign cars an equivalent number of miles for their account. However, should any line elect to terminate the agreement, the excess empty mileage would be settled on the current mileage rate as provided by Car Service Rule 4.

The Plan Is Carefully Supervised

Although the instructions given to the chief dispatchers, when the plan was inaugurated, were complete and specific, we realized that their viewpoint was more or less limited to their own and adjoining divisions, and that they were not always in a position to decide the method of home routing that was most efficient for the system as a whole. Accordingly, representatives of the home route bureau, thoroughly familiar with system car distribution, called on the chief dispatchers. These representatives spent a day or two at each dispatching office and reviewed the local situation in detail. This resulted in straightening out a number of problems, and in giving the chief dispatchers a greater grasp of the situation as a whole.

The home route bureau, by means of graphic charts, maintains a continuous and current check on the entire car situation. The basic chart shows separate graphs for cars on line, cars loaded on line and received loaded from connections, and the average daily ownership. Another chart is maintained for box cars, with graphs of ownership, number on line, number required (with both daily and weekly averages, based on 5.5 days average for loading box cars), number ordered and number loaded. A similar chart for coal cars shows the ownership and the number ordered, while a fourth graphic chart shows the ownership of cars of all types and the number of cars of all types ordered. By means of these charts, we are able to keep in constant control of the car situation.

Each year, monthly standards are set for the system as a whole, and for each division separately. These standards have been carefully computed on the basis of previous performances and upon estimated improvements. Besides giving the superintendents a definite goal toward which to work, they supply the incentive for competition. The standards set up for 1929 for each division are given in Table 1, which shows the detailed line-up for the entire system.

Car Handling Statistics

In order that a complete picture of the improved results may be obtained, the car handling statistics for the system are given in Table 2, on a comparative basis, 1928 with 1927.

It will be observed that the cars loaded on the line and received loaded from connections showed a decrease of 1.3 per cent, the serviceable cars on the line showed a decrease of 3 per cent and the total cars on line showed a decrease of 5.2 per cent, while the car hire expense was reduced 31.9 per cent. A most interesting feature is the decrease of 2.2 per cent in loaded car miles, and of 4.1 per cent in empty car miles, proving conclusively that the reduction in car hire expense was brought about by improved methods, and not at the expense of an increase in the empty car miles.

W. Davidson, general storekeeper of the Illinois Central and chairman of the Purchases and Stores division of the American Railway Association, has appointed H. C. Stevens, general storekeeper of the Wabash, chairman of the committee on committees of the division, to select the personnel of the committees assigned to prepare reports during the year. Mr. Stevens has been a member of the general committee of the division for several years.

Missouri Pacific Speeds Up Terminal Operation

By W. Rogers
Superintendent of Telegraph, Missouri Pacific

ADVANCE transmission of information relating to freight trains, so that the yardmaster at the distant terminal can prepare switch lists before the train leaves the initial terminal, has made it possible for the Missouri Pacific to increase the efficiency of yard operation and the capacity of terminals materially at St. Louis, Mo., Kansas City, and Osawatomie, Kan. It had been the general practice to furnish this information by Morse telegraph, but this proved expensive and unsatisfactory and considerable time elapsed after the

Two Transmitting Machines in the Topping Avenue Yard Office at Kansas City, Mo.

arrival of a train, before its classification could be undertaken, owing to the necessity of preparing switch cards. This lack of complete advance information as to the make-up of a train, has been overcome by the installation of teletype (printing telegraph) equipment at those three terminals.

The new method of transmitting this information by the telegraph typewriter also accomplishes other functions, and as a result, it has been possible to combine a number of individual reports, with a consequent saving in clerical labor and expense. One of these is known as the wheel report and is compiled by the yard clerk at the terminal in which the train is made up. From this report, the car accountant obtains the car number, initial, gross and net weight, point at which the car is picked up, point at which it is left and the number of miles the car is moved. Then there is what is known on the Missouri Pacific as the "No. 16" report, which is primarily for the service bureau. This report shows the symbol number, car number and initial, contents, consignee, destination, time of departure, routing and junction point of every red ball car. This information enables the service bureau to keep shippers informed as to the movements of red ball cars. In addition, copies of these "No. 16" reports are furnished to traffic department representatives and to the refrigerator department for use in policing, icing and diverting perishable freight.

Under the new method, all of these reports have been combined into one report and all are prepared in one operation. This was accomplished by using the wheel report as a basis and revising it to contain all of the information formerly embodied in that report, the "No. 16" report and the train consist. The form is so designed that it can be prepared on one of the special teletype transmitting machines, or on a typewriter, or in longhand. The equipment now installed provides for simultaneous preparation and transmission of the combination wheel report and consist in both directions between St. Louis, Mo., and Kansas City, and also between Kansas City and Osawatomie, Kan. At St. Louis, there are three teletypes in the 23rd street yard office (two in service, and one spare) and three machines in the service bureau in the general office building (two in service, and one a spare). At Kansas City, five teletypes are located in the Topping Avenue yard office (four in service, one a spare). Three machines (two in service, one a spare) are located in the yard office at Osawatomie.

How the new system works will be made clear by taking a typical train, such as train No. 71, departing from St. Louis at 3 p.m. About 1:30 p.m. the yardmaster starts to build up this train on a certain track, commencing with the caboose. A yard clerk takes the initials and numbers as the cars are "kicked in" on the make-up track and telephones them to the bill clerk in the yard office, who assembles the bills, and places them in the same order as that of the cars in the train. About 2:30 p.m. a clerk in the yard office commences typing the combination wheel and consist report on the teletype. As he does this, the report is automatically reproduced on the teletype machines located in the service bureau in St. Louis, and in the yard office at Kansas City. Within two or three minutes after the last car is placed in the train, the report is complete. Sufficient copies are made on the machine in the St. Louis yard office to provide one copy for the yard office record and two for the conductor to take with him. The conductor, if any cars are picked up enroute, adds them to the report and if any are set out, he makes a note on the report. The conductor's copies are delivered to the yardmaster at Kansas City, one is filed there and the other forwarded to the car accountant.

In the meantime, the copy of the report made by the teletype in the service bureau has been run through the record book and the bureau is in position to advise shippers that their cars moved out on train 71. Additional copies for others interested are run off in the service bureau on a duplicating machine. At Kansas City, the copy received there is run through a duplicating machine to make additional copies for the yard forces, the traffic department and the superintendent. By this means cards are prepared ready to be applied to the cars as soon as train 71 pulls into the yard, while the switch engine foremen have their switch list and instructions.

* * *

A Stretch of Four-tracked Lackawanna Main Line Between Boonton and Denville, N. J.

Status of Railroad Consolidation

Interstate Commerce Commission is said to have Commissioner Porter's plan under consideration

By F. J. Lisman
F. J. Lisman & Co.

THE financial community is eagerly awaiting the tentative plan for railroad consolidation reported to have been completed by Commissioner Porter and now in the course of consideration by the full Interstate Commerce Commission.

This plan, whatever it is, while not actually enforceable on the companies will be, nevertheless, a step forward because it will clarify their status and quite likely destroy several propositions put forward, as some people believe, to "muddy the waters." The Porter plan is supposed to deal with substantially all railroads of importance throughout the country, but the greatest interest pertains to the lines east of Chicago and St. Louis, or what is known as the Trunk Line Territory.

Will the Commission pronounce in favor of four trunk line systems in this territory, or five or six? Surely there will not be more than that. Quite likely the plan will not be published until the difference of opinion as to the number of trunk line systems to be sanctioned is thrashed out within the Commission.

Trunk Line Territory

There are two big systems in the East; that is, the 11,700-mile New York Central and the 11,500-mile Pennsylvania, (which latter also controls the Norfolk & Western with 2,200 miles) which between them have earnings of fully one-half the entire amount earned within that territory. Naturally, these two systems feel that they can retain their superiority by having the remainder of the lines split into a number of relatively weak adversaries rather than into systems which will nearly equal them in strength. It is the world old game of dividing the enemy.

The Van Sweringens have made their application to the Commission, asking for the right to merge the Nickel Plate; Delaware, Lackawanna & Western; Erie; Chesapeake & Ohio; Pere Marquette; Wheeling & Lake Erie, and the Pittsburgh & West Virginia. The Baltimore & Ohio has applied for the right to take over the Reading; Jersey Central; Buffalo, Rochester & Pittsburgh, and the Western Maryland, in which lines it now has a dominating minority interest; it also wants the Wabash and Lehigh Valley. These plans would give the Van Sweringens two through lines from Chicago to New York; it would give the B. & O., besides its present line from Chicago to Baltimore and Washington, a direct line from Chicago to New York, (including some trackage rights in Northern Pennsylvania) these two divisions being separate main stems for about three-quarters of the distance.

While this looks like eliminating competition, sight should not be lost of the fact that the New York Central owns two complete and formerly competing lines from New York to Chicago, that is, the old Lake Shore Line and the Michigan Central and the original West Shore. Similarly the Pennsylvania owns substantially two complete lines; that is, the Pittsburgh and Fort Wayne and the Pan Handle, between Chicago and Pittsburgh and again the main line from Pittsburgh to the East and the Philadelphia and Erie division from the Great Lakes easterly.

The dominating sentence on consolidation of the I. C. C. act of 1920, is as follows: Section 5 Paragraph IV: "The Commission shall, as soon as practicable, prepare and adopt a plan for the consolidation of railroad properties of the Continental United States into a *limited number of systems.* In the division of such railroads into such systems under such plan, competition shall be preserved as fully as possible and wherever practicable the existing routes and channels of trade and commerce shall be maintained." It might appear that the definition of "limited number of systems" should be interpreted as meaning almost the minimum number.

If the Commission should decide in favor of four eastern systems, then such a plan could be effectuated almost immediately because the Van Sweringens actually control the most important lines which they wish to merge, while the Baltimore & Ohio, jointly with the New York Central, controls the immensely important Reading and Jersey Central roads. Presumably the New York Central would acquiesce to the recommendation of the Commission, although it would want to retain rights over the Jersey Central with its very valuable terminals on New York Harbor. The Wabash and Lehigh Valley which, in that event, would be allotted to the Baltimore & Ohio, would remain where they are, nominally independent but under the stock control of a Pennsylvania Railroad subsidiary. Their future allocations would have to await the action of the Supreme Court because Mr. Atterbury is quoted as having said that only the Supreme Court could make him surrender these properties.

Should the Commission decide in favor of one or two additional systems, then several lines controlled by different companies would have to be pried loose from their present ownership. The Western Maryland would have to be relinquished by the Baltimore & Ohio, the Wheeling & Lake Erie by a holding company of the Van Sweringens and the Wabash by the Pennsylvania. It does not seem in the least likely that the very interesting and ingenious Wabash or Williams plan will be sanctioned because it does not seem reasonable that the Commission will authorize a new trunk line system under the aegis of the Pennsylvania Railroad.

Four Trunk Line Systems Ready for Action

A four trunk line plan can be effectuated immediately; a five or six trunk line plan would leave everything in suspense indefinitely because it would be largely theoretical for several years. It would have to await the action of the highest court in the interpretation of the Interstate Commerce and the Clayton acts and as to whether the obvious evasion of the intent of the law by the creation of two important holding corporations—

the Alleghany Corporation and the Pennroad Corporation—is within the law. These holding companies are not under the jurisdiction of the Commission and are only subject to the I. C. C. act if the Supreme Court should find a theory for that purpose.

The Clayton Act is quite specific in forbidding certain matters to be done directly or indirectly. The entire capital stock of the Pennsylvania Company which now owns the dominating interest in the Wabash and Lehigh Valley roads is owned by the Pennsylvania Railroad which latter claims that its subsidiary corporation has acquired these stocks as an investment. The Supreme Court may differentiate between the status of an owned subsidiary and that of a friendly ally like the Pennroad and the Alleghany corporations. If the Supreme Court should not find a way to do this then Congress will surely make a try at it.

If four trunk line systems should be ordained then quite likely it will be deemed in the interest of New England to group all New England roads, excepting only the Boston and Albany division of the New York Central, into one strong system which will be in a position to support local industry by making traffic arrangements with all the tonnage hungry trunk lines and Canadian systems.

From the West there is now only one definite application before the Commission; that is the one of the so-called Hill roads to merge the 8400-mile Great Northern with the 6700-mile Northern Pacific. In this case the Commission is struggling with two different mandates of the law, one of which is to the effect that competition shall be preserved and the other that the properties shall be operated in the most economical and efficient manner.

Undoubtedly there is some substantial competition between these two companies but there is equal certainty that the merger of these two roads would result in great economies. Another factor is that the Northwest has one railroad system too many. This remark applies particularly to the Pacific extension of the Chicago, Milwaukee, St. Paul and Pacific. It would be much more desirable to have one of the Hill roads merge with the Milwaukee because the latter has a large amount of unused carrying capacity on its electric division but the Milwaukee is not asking to be merged, while the other two are.

If the Commission should consent to this merger, with the necessary absorption of the tributary weak lines, as was done in the New York Central case, then the question would arise as to whether the 9013-mile Burlington System, almost the entire stock of which is owned by the Hill Roads, should be segregated. This road's stock is pledged under various mortgages and it would be difficult to segregate it. The Burlington itself is a very large system and to a considerable extent its traffic relations are so interwoven with the northern lines, that its segregation would be quite a cumbersome problem. It is not impossible that the Commission may sanction merger of the two northern roads if they dispose of the Burlington stock ownership.

On the other hand, if the words "limited number of systems" were to be applied to the Northwest and if the present actual existence of the Hill System were to be legally recognized, then such a strong system would be created that it would become necessary to form other very strong combinations to compete with it. The Northern Pacific, Great Northern and Chicago, Burlington & Quincy, with the addition of some shorter weak lines, would have close on to 25,000 miles with annual earnings of over $400,000,000 (this is only half the gross revenue of the Pennsylvania and Norfolk & Western). The Commission would have an interesting problem on its hands in suggesting other mergers to balance this.

The Western Situation

The Western situation is not as awkward or bothersome as the one in the east because the matter of antagonistic interests and personalities has not injected itself; this may still develop.

The next biggest system in the West is the 13,000-mile Rock Island-Frisco combination with the possible addition of some St. Louis-Chicago lines, because the southwestern roads now terminating in St. Louis need and would all want to have terminals in Chicago in order to compete on even terms. The Chicago & Eastern Illinois once was part of the Frisco and it would appear to fit well into that system, especially in possible connection with the Gulf, Mobile & Northern.

The other systems would probably be grouped around the Southern Pacific with 16,900 miles, (including 1500 miles in Mexico and 700 miles of the Pacific Electric), the 13,480-mile Santa Fe, the Chicago, Milwaukee & St. Paul and Pacific with 11,250 miles and the Union Pacific with 9,857.

Southeastern System

In the Southeast there are about four systems of importance now; the 8600-mile Illinois Central, occupying the dominant position in the eastern part of the Mississippi River Valley from north to south, with its wholly owned Central of Georgia, giving access to the Atlantic at Savannah. Further east there is the 10,200-mile Louisville & Nashville-Atlantic Coast Line System, the 10,000-mile Southern Railway System and the 3,500-mile Seaboard Air Line. The Seaboard is not financially strong; its competition with the Southern Railway is merely incidental, being of considerable importance only in Atlanta and Birmingham. The Commission may suggest that the Southern Railway should absorb the Seaboard.

Several hundred minor railways will all have to be dealt with on their respective merits; the necessary precedents for these have largely been laid down in the New York Central consolidation. Among the minor companies, however, are some which are strategically important, such as the Western Pacific and the Midland Valley, besides the weak Minneapolis & St. Louis and the Chicago Great Western, each with about 1500 miles, and the Chicago & Alton with 1000 miles.

* * * * *

No doubt this consolidation plan has been a very arduous and interesting piece of work for Commissioner Porter and for the other commissioners. Many others may indulge in this "indoor sport" of arranging the railroads of the United States into a limited number of systems, but in the final analysis it is a question between willing buyers and willing sellers. Money will have to do some considerable talking. If the Pennsylvania Railroad does not wish to sell its interest in the Wabash, or if the Southern Railway or Illinois Central do not wish to absorb the Seaboard Air Line, then it may all be futile—the best laid plans of mice and men will go astray.

THE ARCADE & ATTICA RAILROAD CORPORATION operating a line (26 miles long from Attica, N. Y., Southward to Arcade) has petitioned the Public Service Commission of the state for authority to discontinue passenger train service, receipts from this traffic having fallen to about $1000 a year.

The A. C. L. Turns the Corner

Net operating revenues in first half of 1929 are 48 per cent above the same period last year

IN the first six months of 1926—which was the peak year of the Florida boom—the Atlantic Coast Line had gross revenues of $53,499,459. During the first six months of the current year gross revenues totaled $42,841,515, or 19.9 per cent less than in the same period at the height of the boom. Operating expenses, however, for the first six months of the current year year were $27,996,213, as compared with $35,886,247 during the same period in 1926, a decrease of 22 per cent. The Atlantic Coast Line has succeeded very well indeed in cutting its garment to accord with its cloth. The details are set forth in Table I, which gives comparisons of revenues and expenses for the first six months of the years 1925-29 inclusive. The strength of the road's "come-back" following the collapse of the Florida boom is markedly shown in the figures for net operating income. This reached a total of $11,966,787 in the first half of 1926; it declined to 70.5 per cent of that figure in the first six months of 1927, and to 53.8 per cent of it in the same period of 1928. In 1929, however, recovery has occurred so that net operating income for the first half of the year was 87 per cent of that earned in the first half of 1926.

Traffic, revenue and expense statistics for the years 1916 to 1928 inclusive are given in Table II, which shows that operating revenues, $71,393,174, in the last year mentioned were the lowest of any year since 1922 and were one-fourth less than those of the peak year, 1926. As has been noted above, however, operating revenues increased during the first half of 1929, as compared with the same period of 1928, and operating expenses decreased, so that net operating revenues showed an improvement of $4,845,714, or 48 per cent. Plainly, then, it is safe to assume that 1928 was the low point in the fortunes of the A.C.L. as viewed for the period from 1922 to date.

As unsatisfactory as 1928 was from an earnings standpoint, however, earnings were still sufficient to care for the regular 7 per cent dividends and the customary extra dividend of 3 per cent on common stock

The Atlantic Coast Line

(the extra being declared out of non-operating income), permitting an increase of $232,000 in the profit and loss credit balance, which at the end of 1928 stood at $92,958,631—equivalent to 106 per cent of total capital stock liabilities. Unsatisfactory as 1928 was, nevertheless, income available for interest was 2.2 times such requirements. Moreover, as a recent survey of this property issued by Wood, Struthers & Co., points out, equities of the A.C.L. in undistributed 1928 earnings of subsidiaries would add some $7 per share to its 1928 earnings.

The extent to which freight service operating efficiency has been improved this year as compared with last is shown in Table III, which gives comparative

Table I—Revenues and Expenses, First Six Months

	January 1st to June 30th				
	1929	1928	1927	1926	1925
Operating Revenues	42,841,515	39,549,339	45,407,476	53,499,459	47,789,180
Operating Expenses	27,996,213	29,549,751	33,370,196	35,886,247	31,556,643
Net Operating Revenues	14,845,302	9,999,588	12,037,280	17,613,212	16,232,537
Operating Ratio	65.35	74.72	73.49	67.08	66.03
Operating Income	11,131,775	6,937,592	8,858,810	14,207,004	13,172,941
Net Operating Income	10,416,663	6,437,114	8,441,464	11,966,787	11,774,529

Table II—Atlantic Coast Line—Traffic, Revenues and Expenses

Year	Mileage operated	Revenue ton-miles (Thousands)	Revenue passenger-miles (Thousands)	Rev. per ton-mile, cents	Total operating revenues	Total operating expenses	Net operating revenues	Operating ratio	Net railway operating income	Dividend income	Net after charges
1916	4,727	2,514,243	407,151	1.002	$37,322,085	$24,060,605	$13,261,480	64.4	$12,259,687	$2,750,986	$9,671,627
1917	4,781	3,001,835	517,787	0.965	44,063,331	29,773,995	14,289,336	67.5	13,239,902	2,800,000	10,701,294
1918	4,820	3,374,351	643,309	1.081	56,992,329	42,663,303	14,329,026	74.8	11,155,520	2,691,429	7,171,954
1919	4,868	3,137,925	668,054	1.302	63,559,015	53,499,911	10,059,104	84.2	6,539,900	2,689,619	7,187,537
1920	4,890	3,290,283	638,558	1.465	74,121,956	68,943,732	5,178,224	90.3	1,380,569	2,890,384	7,684,156
1921	4,893	2,479,340	481,453	1.797	66,730,768	58,005,833	8,724,935	87.0	6,860,107	2,754,425	1,790,569
1922	4,852	3,031,173	460,797	1.612	70,823,345	52,033,448	18,789,897	73.47	14,416,370	3,221,772	11,604,074
1923	4,861	3,712,154	518,448	1.524	80,882,311	59,868,428	21,013,882	74.02	15,496,609	3,222,087	12,797,073
1924	4,866	3,764,631	512,238	1.522	81,785,921	60,335,128	21,450,796	73.77	15,179,185	3,897,690	12,589,983
1925	4,869	4,440,360	637,492	1.456	93,997,697	64,966,121	29,031,576	69.1	20,184,546	4,086,674	17,111,418
1926	4,924	4,751,444	610,963	1.431	97,086,517	70,701,770	26,384,746	72.8	17,585,808	4,866,997	14,462,286
1927	4,996	3,787,300	435,038	1.554	80,426,296	64,330,234	16,096,061	80.0	10,273,934	4,636,986	7,385,627
1928	5,104	3,313,823	375,874	....	71,393,174	55,966,058	15,427,115	78.4	9,895,362	4,690,894	5,973,323

freight service operating statistics for the first five months of the two years. Improvement will be noted in almost every item. Gross ton-miles rose 7.7 per cent, but train-miles were held to a 5.3 per cent increase and train-hours to less than one per cent. Car-miles per car-day increased 14.6 per cent, freight cars per train 4.8 per cent and gross ton-miles per train-hour, 6.9 per cent. Average tons per loaded car showed a decline of 8.1 per cent—presumably for reasons beyond railroad control, such as an increase in the proportion of light-loading commodities, and this condition made the increase in net ton-miles per car-day and in net ton-miles per train-hour considerably less than they otherwise would have been.

Pounds of coal per 1,000 gross ton-miles declined 3.5 per cent to 109. The average percentage of unserviceable locomotives for the first five months of 1929 was 12.2 and of freight cars, 5.2.

In 1928 the A.C.L.'s tonnage was divided as follows: Products of agriculture, 11.91 per cent (fruit and vegetables 5.62 per cent); products of animals, 0.97 per cent; mine products, 34.21 per cent (coal, only 4.69 per cent); forest products, 24.45 per cent; manufactures and miscellaneous, 24.05 per cent; and l.c.l., 4.41 per cent. The relative importance of high grade commodities explains the relatively high earnings per ton-mile —1.554 cents in 1927—and also the comparatively light load per car. It is also indicative of the high grade, accelerated freight service which the A.C.L. provides for its patrons.

The Atlantic Coast Line owns 51 per cent of the stock of the Louisville & Nashville, which in turn owns 72 per cent of the stock of the Nashville, Chattanooga & St. Louis. The A.C.L.'s dividend income has been an important source of revenue. In the past five years it has varied as follows:

	Dividend Income	Percentage of operating income
1924	$3,897,690	24.7
1925	4,086,674	18.2
1926	4,866,997	24.8
1927	4,636,986	46.4
1928	4,690,894	48.9

Dividend income in 1928 was equivalent to 5.8 per cent on outstanding common stock.

Net increase in property investment in the past five years has been as follows:

Year	Road	Equipment
1924	$5,082,117	$2,493,623
1925	7,449,975	3,150,674
1926	10,250,856	8,680,864
1927	5,325,468	* 216,900
1928	3,374,517	* 97,632

* Decrease.

A gage of roadway maintenance activity during the last five years is shown in the following selected physical units of new material applied:

Year	Tons of New 100 lb. Rail Laid	New Ties Inserted	Cu. Yd. of Ballast Applied
1924	34,343	2,077,066	552,771
1925	47,177	2,213,840	493,216
1926	64,592	2,256,790	643,546
1927	44,821	1,883,333	1,320,513
1928	41,393	1,637,612	1,181,181

The ratio of the principal subdivisions of operating expenses to operating revenues in 1928 were as follows: Transportation, 35.6; maintenance of equipment, 20.7; maintenance of way and structures, 15.3.

The company at the end of June, 1929, had 847 road locomotives of an average tractive effort of 33,111 lb., and 180 switching locomotives of an average tractive effort of 32,397 lb. Of 1,033 locomotives owned at the end of 1928, 343 were Pacific, 35 Mikados, 20 Santa Fe's, 10 Decapods and 322 Ten-Wheelers.

Double tracking of main line from Richmond, Va., to Jacksonville, Fla., was completed in 1925 (with the exception of a few sections of single track over bridges and two parallel lines in Georgia which are operated as two single track lines). At the end of 1928, 606 miles of double track and 112 miles of single track were protected by automatic signals.

In general, it may be said that the property is a high-grade railroad, conservatively financed, and developed to a degree to enable it to handle a considerable increase in business without a corresponding increase in operating expenses. That business will materially increase in its territory no one seems to doubt—and indeed, the increase has, in the current year, already begun.

Table III—Comparison of Selected Freight Operating Statistics First Five Months

	1929	1928	Per cent of change Inc.	Dec.
Mileage operated	5,150	5,105	0.9	
Gross ton-miles (thousands)	5,642,177	5,237,189	7.7	
Net ton-miles (thousands)	1,992,897	1,934,663	3.0	
Freight train-miles (thousands)	3,805	3,614	5.3	
Freight locomotive-miles (thousands)	3,884	3,692	5.2	
Freight car-miles (thousands)	171,225	155,116	10.4	
Freight train-hours	268,375	266,232	0.8	
Car-miles per day	33.7	29.4	14.6	
Net tons per loaded car	19.3	21.0		8.1
Per cent loaded to total car-miles	60.2	59.5	1.2	
Net ton-miles per car-day	392	367	6.8	
Freight cars per train	46.0	43.9	4.8	
Gross tons per train	1,453	1,449	2.3	
Net tons per train	524	535		2.1
Train speed, miles per train-hour	14.2	13.6	4.4	
Gross ton-miles per train-hour	21,023	19,672	6.9	
Net ton-miles per train-hour	7,426	7,267	2.2	
Lb. coal per 1,000 gross ton-miles	109	113		3.5
Loco. miles per loco.-day	52.7	51.2	2.9	
Per cent freight locos. unserviceable	12.2	11.9	2.5	
Per cent freight cars unserviceable	5.2	5.9		11.9

FIVE HUNDRED DOLLARS REWARD has been paid by the Boston & Maine to E. A. Nash and A. L. Simpson, police officers of the road, for tracing the origin of a fire which destroyed a freight car at Somerville, Mass., on June 2. The culprits were three boys, who have been convicted. These rewards were made under a standing offer, issued by the road some two years ago, for information concerning malicious or illegal fires on the company's property.

* * *

Canadian Pacific Officers Inspect New "5900" Locomotive, the Largest Ever Built in the British Empire

I.C.C. Favors Trucking in New York

But agrees that present constructive station facilities bring competitive abuses—Outlines a legal method for providing direct delivery

THE Interstate Commerce Commission has issued its decision in the New York freight trucking ("constructive station") case, No. 19715 and I. and S. No. 3100, permitting the railroads to discontinue "constructive station" service and limiting railroad trucking of freight to service between rail heads and inland stations and to "trucking in lieu of lighterage," which last, however, is restricted to deliveries of freight to other railroads or steamship lines. Constructive station service and trucking in lieu of lighterage (direct to consignee) are held to promote a tendency to violation of sections 2 and 3 of the interstate commerce act and to be incompatible with section 15a. The advisability of extending rail and motor truck co-ordination is urged and a method of securing such co-ordination legally is suggested.

The decision, written by Commissioner Porter, follows closely the recommendations contained in the tentative report of Attorney-Examiner Harry C. Ames (see *Railway Age, Motor Transport Section,* December 22, 1928, page 1275).

Manhattan's Peculiar Situation

The decision first describes briefly the general situation with regard to freight service on Manhattan Island —how but one railroad, the New York Central, serves the island directly by rail; and how the other railroads, having rail heads across the various arms of the sea which isolate Manhattan, have served it from pier stations with which rail terminals are connected by water craft—car floats or lighters.

The usual method of freight delivery has been to unload shipments from cars at the railhead terminal, load them into lighters and move them by that means to pier stations on Manhattan from which latter consignees call for them in their own or contract trucks. For many shipments car floats, rather than lighters, are used. On these inbound freight cars are themselves floated to pier side and the freight unloaded to pier floor, consignees calling for it in the same manner as with lighterage delivery. For outbound freight the direction of movement is reversed.

Under the "constructive station" plan, inaugurated, as the report explains, by the Erie in 1921, inbound freight is unloaded from cars directly into motor trucks which are ferried across the river to the Manhattan shore and then delivered directly to the consignee without first unloading at the railroad pier station. From the railhead across the ferry to the Manhattan shore the truckman acts as the agent of the railroad. From the first contact with the Manhattan shore the truckman becomes the receiving agent for the consignee. As the report explains, the system is in reality "a modified form of store-door delivery, the only difference being that in the latter the carrier assumes responsibility to the store-door, whereas in the former the responsibility is divided and the dividing line becomes the constructive station.

"The record is convincing that the carriers should make every effort to avail themselves of truck transportation and co-ordination, properly-policed, on Manhattan Island to the end that the expensive pier stations may gradually be discontinued."

Inland Station Problem Not So Complex

In addition to constructive station service the Erie in 1921 likewise instituted "inland stations." These stations are stations in the full sense of the word from which consignees must call for their freight—only that connection is made with rail head by motor truck rather than by car float or lighter and that the stations are operated by the trucking contractor, as agents for the railroad, rather than by the railroad directly. The handling of freight, as far as shippers and consignees are concerned, at such stations is not essentially different from the procedure at a pier station; none of the tariff and other complexities arise in connection with it, as they do with the constructive station; the commission approves the practice.

The Erie and all the other railroads which followed it, in establishing constructive station service, with the single exception of the New Haven, wished to discontinue it.

Comparable to this service was another which the Commission disapproves, i.e., trucking in lieu of lighterage. Says the report:

> All of the sections referred to are also in the so-called free-lighterage limits of New York harbor and are accorded lighterage delivery at the New York rates at designated piers, within those limits, on all carload freight entitled to free lighterage. It will thus be seen that, by means of car floats, lighterage service, or on-track facilities, the entire harbor, whether on North River, East River, or upper New York bay, is treated as one rate district. Manhattan Island is the only part of this district which has been accorded constructive-station service, but all portions have been accorded the service of trucking in lieu of lighterage, which as practiced by some lines amounts to constructive-station service.
>
> Originally, trucking in lieu of lighterage was performed for the carriers strictly as an emergency or economical service. That is to say, when carload freight, entitled to free lighterage, was at the terminals and required expedited movement to meet sailing connections, or when it would be cheaper to have it trucked, the carrier at its own option would arrange for the trucking. As thus conducted, the shipping public had no particular interest in it because it was merely a mechanical substitute for lighterage service. Lightered freight is, of course, delivered alongside piers or steamships, and trucks substituted for lighterage under the original scheme, would make similar pier deliveries.

Constructive Lighterage an Instrument of Competition

It was not until 1926 that the service expanded to its present form. At that time the New York Central began to feel the competition of the constructive station and in order to meet it, conceived the idea of allowing truckmen performing trucking in lieu of lighterage to merely

touch or pass by the lighterage point nearest and en route to the consignee and continue on under load to the consignee's door. It pays allowances ranging from 8.5 cents to all Manhattan lighterage points, to 15 cents to some points in the outlying lighterage limits of New York Harbor. This allowance covers the service between rail head and lighterage point, and for the service beyond the truckmen collect charges from the shippers. Responsibility also divides at the lighterage point. It will be seen, therefore, that in practical effect the service is exactly the same as that accorded through constructive stations. It employed 34 truckmen who immediately became active solicitors for the New York Central. Although the usual optional feature of the service was and is provided for in the tariffs no instance is referred to of record where any consignee or consignor desiring the service was refused it. On the contrary, the service was and is actively solicited and is a very potent factor in diverting tonnage from other lines. Later, the Jersey Central and the Baltimore & Ohio, to meet this competition, made similar arrangements with truckmen.

All the lines providing this service wished to discontinue it, with the exception that the New York Central wished to retain it for New England, traffic to meet the constructive station service of the New Haven, in the event that the Commission authorized continuation of the latter. The Commission disapproved both services.

The Erie inaugurated constructive and inland station service because of "great congestion and lack of adequate terminal facilities." Other lines followed, prompted largely by reasons of competition, but to some extent to promote economy.

The report continues:

A very low percentage of the total traffic has sought the constructive station. Moreover, the inbound tonnage forms substantially the entire movement. This lack of balance in directional movement is certain to produce high trucking costs. The dearth of tonnage, also has failed to produce expected economies at pier stations. There is no question that if the total tonnage at the piers could be handled through constructive stations and the piers abandoned economies would result. But when the constructive-station tonnage does not reach a point where the piers, or any of them, can be abandoned, the result is a diversion from the piers to an alternative service, and an increase in unit costs at the piers. The pier stations, together with the investment in equipment necessary to serve them, have heavy fixed costs. Respondents, other than the New Haven, contend that real economy will result in unit costs if the comparatively light tonnage now moving through constructive stations is restored to the piers. Witnesses for each respondent testified that the existing pier facilities, coupled with inland stations of the roads which maintain them, are sufficient to take care of the small amount of tonnage which has moved through the constructive stations.

Another reason for discontinuance of the practice on which respondents, other than the New Haven, are agreed is that since the service has been established there have been constant rumors that the trucking charges to consignee for the service beyond the constructive stations have been manipulated so as to cause discrimination. Witnesses for all of these respondents were careful to refer to these rumors in their testimony but were just as careful to assert that so far as their particular lines were concerned the rumors could not be verified. Apparently the persistence of the rumors, however, impelled the carriers in 1927 to insert in their contracts with the truckmen a provision that the minimum trucking charges beyond the constructive station should be 5 cents on commodities generally and 4 cents on newsprint. For some reason, not explained of record, a similar provision was not made in the contracts covering constructive lighterage (i.e., trucking in lieu of lighterage). As a consequence truckmen operating for those carriers which permit the lighterage points to be made constructive stations are in position to, and do, make charges to consignees below the minima provided for the constructive stations proper. This, of course, creates an unbalanced competitive situation and the lines which adopted the so-called constructive lighterage profit accordingly. It is the latter practice which has made the carriers fear that the ultimate result of these trucking practices will be store-door delivery at or near the New York rates. They concede that no shipper or organization of shippers has ever requested such a concession. But they fear that the habit of receiving freight under the constructive-lighterage plan at a very low cartage cost over the New York rate will grow to such an extent that it will be eventually demanded as a right. A proper cartage charge or a proper share of cartage expense in any scheme of store-door delivery is properly to be borne by the consignee. Nothing can be demanded as a right which is ground on the false premise that the shipper has, by habit or otherwise, borne less than his proper share of such expense.

The positions of the various protestants are at a decided variance. These conflicting positions show both the enormity and complexity of the problem and demonstrate that it would be virtually impossible to combine them into any one concrete solution suitable to all. Some of the parties, agreed on certain principles, are wholly in disagreement as to the application of them. Sectional feeling, not only between Jersey City and New York, but among the different boroughs of New York, crops out. Each locality has a solution, but each makes itself the paramount consideration. This is not so much selfishness as it is self-preservation.

Constructive station service and trucking in lieu of lighterage "have resulted in according to shippers and receivers of freight on Manhattan a service which is denied to competing shippers and receivers in the same rate groups. . . . They have resulted in competitive measures which have an undoubted tendency to cause a disruption in the amount of tonnage handled by the several lines and a vicious competitive situation in which the amount of allowances paid to truckmen have become the means of barter and trade with shippers and receivers of freight in order to secure their business. . . . The situation is not at all comparable with that at St. Louis where we have recently approved the continuance of constructive stations."

The report then outlines the stand taken by various interveners in the case. The Port of New York Authority advocated the virtual abandonment by the railroads of their pier facilities—all carload freight to be handled directly to and from rail head in store-door collection and delivery and l. c. l. though "universal" (that is serving all railroads) inland stations, connected with rail heads exclusively by motor truck service. It conceded that the shipper, rather than the railroad, should bear the cost of loading freight from car to truck at rail head.

The Merchants Association of New York favored out-and-out store-door delivery, but if that were not possible, the continuance of constructive station service with the carrier paying the cost of loading from freight car to truck at rail head. The Board of Commerce and Navigation of New Jersey did not object to any of the newer forms of service, but desired their costs to be added to the flat New York rate (which is now the same as the Metropolitan North Jersey rate) or that similar concessions be made to New Jersey railroad patrons.

The Warehousemen's Association of the Port of New York, while not contesting any of the proposals put forward, favored regular water lighterage and opposed trucking in lieu of lighterage, opposed any service which would jeopardize the Brooklyn contract terminals, and doubted the necessity for either constructive or inland stations. There were many other points of view advanced which are omitted herein because of considerations of space, but those given above may be taken

as typical—special interests in the main, some whose well-being was definitely linked with the *status quo ante* the institution of trucking service and others which, having sampled this service, found it to their economic benefit and desired its maintenance and extension.

The report continues with a definition of the problem:

As indicated, the broad subject of inquiry is in respect of the conditions affecting generally the receipt and delivery of freight at New York, with special reference to the necessity for any trucking service as an auxiliary to rail transportation, and providing such necessity is shown, the method of meeting it by means of lawful regulations and practices.

It is no longer open to question that terminal trucking *as a service* is subject to our jurisdiction when voluntary established and maintained by the carriers. *Tariffs Embracing Motor Truck or Wagon Transfer Service.* 91 I. C. C. 539, 546. Section 1 (4) of the interstate commerce act makes it the duty of carriers, subject to the act, to provide and furnish transportation as defined in paragraph (3) of the same section, upon reasonable request. The first question to be considered is whether the terminal facilities which will be provided for Manhattan Island if the proposed schedules are permitted to become effective will be a complete satisfaction of the carriers duties. As indicated the withdrawal of constructive-station service and trucking in lieu of lighterage except in interchange service, will throw all of the business back to the pier stations and to the few inland stations operated by three of the carriers.

The capacity of freight stations is, of course, one of the first matters to consider on the question of adequacy. The record leaves no doubt that from this standpoint alone the pier stations will be able to accommodate the tonnage now moving through the constructive stations. In 1927, for example, a total of 310,283 tons moved through the constructive stations of seven roads, about 6-2/3 per cent of the 4,640,022 tons handled through other Manhattan facilities not including those of the New York Central. The New Haven has handled the greatest amount of tonnage through its constructive station—132,226 tons in 1927, as against an average of 29,676 tons for the six other lines. It is significant, in this connection, that the New Haven is an enthusiastic advocate of the service and desires to continue it.

"Learned and experienced minds have recognized tremendous advantages and possibilities in the service, (store-door delivery) and the various treatments of the subject, coming as they do from responsible organizations, command respect. But that change, under the present state of the law, will have to come with carrier co-operation and cannot come with carrier opposition."

The Manhattan situation is peculiar. Offering a reservoir of tonnage, probably not exceeded by any section in the world of the same area, its isolation by the very waters which originally made and have continued to make it a leading port, now presents a problem which the rail lines terminating in New Jersey must solve in order to share in its tonnage. They must adopt extraordinary measures in extending their service to this island. For 62 years they have made this extension by means of the car float and lighter, supplemented by pier stations and a few team-track locations. It will be difficult, if not impracticable, to enlarge these team-track facilities. Cost of land for this sort of facility is prohibitive. And when it is remembered that the business district of Manhattan reaches to the water's edge, the idea of further supplementing track layouts is not conducive to proper civic development. Access to team tracks must be had by rights of way which cross crowded city streets paralleling the water front.

Pier space is rented from the city government. It is exceedingly valuable and is much sought after. At present the railroads occupy about one-third of the total pier space available Under the "statutory plan" of the Port of New York Authority, it is desired that much of this railroad pier space be released for steamship occupancy. The downtown Manhattan water front, convenient as it is to the financial, hotel, and theatrical districts forms a highly desirable location for steamship piers, especially those of the transatlantic lines.

Pier Handling Disadvantageous

The pier station, as now operated, has its disadvantages both from the carrier and shipper standpoint. It casts one burden upon the carrier which it is not compelled to bear at the ordinary station, i. e., the unloading of carload freight. It would not be practicable for the carrier to allow shippers to unload freight from cars on floats and the shipper receives his freight from the floor of the pier. This requires a vertical lift from the pier floor and makes the process of loading trucks more difficult and expensive than is the case at the usual team track where the car floor and truck floor are on a level. The shipper's truck is driven on the pier for the purpose of receiving inbound freight. This is conducive to congestion on the piers when a number of trucks are on hand and loading.

Individuals and organizations who have studied the terminal problem in New York Harbor have long felt that truck co-ordination is a necessary step in bringing about a permanent solution. One witness, long experienced in the delivery problems of New York, expressed the view that if the late war had lasted 30 days longer, store-door delivery in New York would have been an actuality.

The Greater Economy of Motor Truck Handling

Let us compare a typical truck operation on a carload of freight over one of the west-side lines, destined to a consignee on Manhattan, with the movement of a similar carload through a pier station. In the truck movement, the loaded car is spotted at a team track in Jersey City. The truck is loaded directly from the car and proceeds to the ferry, ordinarily not more than one-fourth mile distant, and is ferried to the New York shore. Without unloading, or other interruption, it moves to the consignee's place of business or to the inland station. In the pier-station service, the car is first switched from the classification yard to the float bridge where it is shunted on to the car float. The car float is then towed across the river by a tug and spotted alongside the pier station. The car is unloaded to the floor of the pier by railroad labor. Later the consignee calls, his truck is loaded by the so-called public loaders who made a charge in addition to the rate, and the freight is taken to his place of business. The float movement not only entails a double handling of the freight but requires a substantial investment in floating facilities.

Under all of these circumstances it can not be fairly said that the respondents should abandon all forms of truck co-ordination, except that used by the three lines maintaining inland stations, and that in respect of interchange freight. The record is convincing that the carriers should make every effort to avail themselves of truck transportation and co-ordination, properly policed, on Manhattan Island to the end that the expensive pier stations may gradually be discontinued.

The Difficulty with Constructive Stations

The next inquiry is: How should this be brought about? Three means are suggested of record and each will be discussed separately. We will first consider the constructive station. This method of delivery has been explained, and we will deal here only with the practicability and propriety of the plan. Consider it first of all from the standpoint of competing shippers. At present the service is provided only on Manhattan Island. If Manhattan Island could be isolated from a rate and service standpoint the solution would be easy. But it is not so isolated. Its shippers are in active competition with those in the other boroughs of New York and with those in the metropolitan district of northern New Jersey. The same freight rates apply to all, and when the constructive stations were established no change was made in that basis. It follows, therefore, that any saving or advantage which Manhattan shippers receive in the way of cartage expense operates to the relative disadvantage of their competitors who pay like rates and normal cartage.

Other Communities Demanding Service

Already the boroughs of Brooklyn and Queens and the northern New Jersey cities are on record demanding the service for themselves if it is to be continued on Manhattan. The allowances now paid to the truckmen for this service compensate them for loading costs. This may be explained by pointing out that the carriers serving Manhattan are now unloading carload freight at piers through their own disability. The disability is

also one of location. But to say that a similar allowance should not be made to truckmen operating constructive stations where carriers are not compelled to unload freight, would be translating a disability of location into a distinct advantage. Nor could the claim of these other communities be denied on the ground that the carriers, not being able to reach New York with their rails, must provide some means of serving it and can, therefore, resort to trucks. It is well settled that the carriers have long since extended their rails to New York by means of car floats. *New York Harbor Facilities Applications*, 100 I. C. C. 383, 387; *United States* v. *Baltimore & O. R. Co.*, 231 U. S. 275. The constructive station on Manhattan, therefore, is an added facility which, if of advantage to Manhattan shippers, may be rightfully demanded by competing shippers in the same rate district. One consignee testified that the establishment of the constructive station had saved his company from 20 to 50 per cent in cartage costs, as compared with similar costs incurred in connection with pier-station deliveries. Under such circumstances it is not conceivable that Jersey shippers would long refrain from clamoring for the service. It may, of course, be urged that if the constructive station is correct in principle, its spread to other localities should not be a bar to its adoption. But it must be borne in mind that in many localities, already adequately served by on-track facilities, it might easily result in an unwarranted duplication of delivery facilities.

Constructive Stations from Standpoint of Carrier Competition

Now let us consider it from the standpoint of carrier competition. The allowance paid by the west-side lines for the haul to the constructive station covers the cost of unloading from car to truck. This puts the loaded truck on West Street, Manhattan Island, at railroad expense. All that the truckman has to collect from the consignee is an amount sufficient to reimburse him for the extra distance to store door. Contrast this with the position of the New York Central, having team-track and station facilities on Manhattan, in its relation to the consignee. Its consignees, in the absence of a similar arrangement, must pay the truckman his loading costs and for the additional haul as well. The consignee ordinarily controls the routing of his freight and in view of this saving in cartage cost he will no doubt direct movement over the lines maintaining constructive stations where it is possible to do so. He will be encouraged in this by the truckman having constructive-station contracts. Many of these large trucking companies have haulage contracts with large shippers and can exert considerable influence on their customers in the way of routing traffic.

Constructive Lighterage Brings Serious Competitive Situation

The New York Central, long the dominating line on Manhattan because of its extensive on-rail facilities, saw its dominance jeopardized by lines which have no such facilities and sought to retaliate. It did not care to establish constructive stations, as such, because it already had on-track stations. In order to meet this constructive-station competition, therefore, it started the constructive-lighterage service as heretofore explained, and thereby, in effect, establishd constructive stations at every lighterage point in the lighterage limits. In doing this, it, in the final analysis, went into competition with its own on-track stations. And, if the Jersey lines in turn meet this competition of the New York Central, as they must, on the Jersey shore, they will be competing with their own on-track facilities there. The New York Central pays allowances a little higher than the constructive-station allowances and does not hold the 34 truckmen employed by it to a minimum charge beyond the lighterage points. When it is recalled that the lighterage limits of New York Harbor extend along both banks of the North and East Rivers and into upper New York Bay, it becomes immediately apparent that the New York Central went its competitors one better and dotted the harbor with constructive stations. It also had 34 keen solicitors in the form of truckmen in its employ and in 1927 it handled more than 200,000 tons of freight in this manner.

This sort of competition made the situation very alarming for the west-side lines. So far only two of them have seen fit to establish similar arrangements, but if the constructive station were to be continued they would no doubt be compelled to meet this competition. The result will be a continual shifting of tonnage from one line to another, dependent upon the ability of the contract truckmen to afford the most favorable trucking rates to consignees. Truckmen having contracts to perform trucking in lieu of lighterage have solicited business away from other lines in order that they might secure these trucking allowances. In one instance in Brooklyn a shipper, formerly paying drayage of 5 cents per 100 pounds for the movement from his plant to the nearest lighterage point, was charged 1.6 cents per 100 pounds by a truckman having such a contract. This shipper was solicited by another truckman who offered to perform the same service free of charge, informing the shipper that upon the execution of a contract he would secure a trucking contract from the railroad.

Another Step Would Be Rebating

It is plain, of course, that one more step in shaving down charges, i. e., the actual payment of money to the shipper for doing his work, would constitute a rebate. *Spencer Kellogg & Sons* v. *United States*, 20 Fed. (2) 459, 461. The record contains no instance of actual rebating, but with trucking competition as keen as it is freely admitted to be, the trend of the practice is unmistakable. This is competition of the most destructive sort because it produces no new traffic. The situation in this respect was aptly stated on oral argument by counsel for the New York Central, as follows:

> Now, as a result of this method of trucking in lieu of lighterage, and in view of the fact that we had 34 truckmen while our competitors had one, we began to get an increased amount of this business, and we now have a very substantial amount of it. We have probably increased our business in this regard more than any other carriers. We have nothing to complain of so far as the increase in volume of business is concerned. *It is quite possible, if this thing continues long enough, we will have it all*, and that, of course, would not be in harmony with the purposes of the Transportation Act, which prescribes a fair return for all roads as a group. There is a point here where we should let go, and we thought when our friends had reached the point where they did not wish to continue this service any longer, that quite properly we should quit. [Italics I. C. C.'s]

The allowances of the New York Central are as much as 15 cents per 100 pounds, which, on a carload of 40,000 pounds, amounts to $60. Although the New York Central is willing to abandon its present practice of constructive lighterage if all lines abandon constructive stations, it insists that if the New Haven is to retain its constructive station as proposed, it should be permitted to continue the practice of constructive lighterage in respect of traffic from and to territory wherein it competes with the New Haven.

New Haven Position

The position of the New Haven in this respect is peculiar. Its constructive station is located at Fifty-ninth Street. This point was selected because it was deemed to be the "logical dividing line between the territory normally served by the Harlem River station (at 132nd Street) and the pier stations (at the foot of Clinton and Pitt Streets, East River)." The New Haven, under its rates, holds itself out to deliver either at Harlem River or at Piers 37 to 42, East River. The cost of trucking from pier stations to the territory intermediate to Fifty-ninth Street would about be equalized with similar costs from Fifty-ninth Street. It attempted, therefore, to put the receiver of freight on the same trucking basis as he would be if he elected to receive freight at the pier stations. To put it differently it maintains that it is entitled to put itself the same distance from its consignees by truck as it puts itself by car float and pier station. The New Haven is the only carrier serving New York which is making a real effort to continue trucking as an auxiliary to rail transportation.

It feels that the service will ultimately result in real economy and permit the abandonment of the more expensive pier-station service. For this reason it is perhaps unfortunate that its physical situation presents what seems to be an insurmountable legal objection to the facility. Its approach to the station from its Harlem River yard is not over water or through territory at which no shippers are located. Moreover it is under no legal obligation to deliver freight at Fifty-ninth Street any more so than at any other particular street in New York. It has made an honest and commendable effort to locate the facility so that it will operate fairly and without discrimination. But the fact can not be explained away that it pays the loading costs and cartage to Fifty-ninth Street for consignees located south of that street, whereas consignees located north thereof and intermediate to Fifty-ninth Street are and would be compelled to load their own freight from car to truck and pay their own cartage from One hundred and thirty-second Street. This is clearly an unjust discrimination under the principle of *Wight* v. *United States*, 167 U. S. 512.

Certain of the protestants urge that the constructive-station service can not be abandoned without a certificate of public convenience and necessity under section 1 (18) of the act. In *Transfer of Freight at St. Louis and East St. Louis, supra*, we rejected a similar contention in respect of the abandonment of certain off-track stations. That principle would appear to apply with even greater force to constructive stations. But, in view of our conclusions as to the lawfulness of the constructive stations as now operated in New York it will be unnecessary to decide the question. Even if we admit the application of section 1 (18) to the situation here presented,

which we do not, we could not construe it so as to perpetuate an unlawful practice.

Situation Not Like That in St. Louis

The constructive stations, as now operated in New York, and the constructive lighterage practice operated in competition therewith must be condemned. They have resulted in according to shippers and receivers of freight on Manhattan a service which is denied to competing shippers and receivers in the same rate groups, which practice could not be defended on complaint under section 3 of the act. In respect of the carriers they have resulted in competitive measures which have an undoubted tendency to cause a disruption in the amount of tonnage handled by the several lines and a vicious competitive situation in which the amount of allowances paid to truckmen have become the means of barter and trade with shippers and receivers of freight in order to secure their business. The practice of locating constructive stations at all lighterage delivery points can not help but result in serious reprisals. The situation is not at all comparable with that at St. Louis where we have recently approved the continuance of constructive stations. In that case we said:

> The physical situation at St. Louis lends itself peculiarly to the constructive-station plan. The constructive station *used by all lines*, being at the first point of contact with the St. Louis shore, is so located that by providing service to and from it the carriers are performing the minimum of the transportation service which they hold themselves out to perform, and yet are performing the full service to which they are lawfully obligated by their published tariff. There is no attempt on their part, by groups or individually, *to reach out with the constructive station, beyond their lawful obligations, for the purpose of securing tonnage, one from the other.* A constructive-station service operated purely as a convenient, expeditious and economical means of completing a contact of carriage merits approval. The same service, *if operated solely as a competitive measure to secure business from a rival carrier more favorably located in respect of certain traffic, may, become burdensome to the carriers, and to commerce as a whole.* [Italics I. C. C.'s]

How Direct Delivery Might Be Legally Provided

If universal inland stations are to be established voluntarily by the carriers, it may be possible for them to make some provision for the direct delivery of freight without the necessity of unloading it at the station platform. This could be accomplished by having the loaded trucks for all roads call at the universal station enroute to the consignee's place of business, and by having a representative of the railroads present at the universal station to check and account for the arrival of the truck. But, if such an alternative and optional form of direct delivery is established the shipper should pay for the loading from car to truck on inbound shipments and from truck to car on outbound business. By this method the Manhattan shipper would be placed in the same position, in respect of his freight, as his Jersey City competitor.

Turning a Natural Disability Into an Artificial Advantage

The next solution offered is store-door delivery. The specific proposal of the Merchants' Association of New York is for store-door delivery on carload freight only. It would not exclude handling of less-than-carload freight permanently but it suggests that experience should first be gained through handling the carload traffic. It is pointed out that the loft buildings, so extensively used on Manhattan, do not lend themselves to the expeditious handling of less-than-carload freight. It would appoint a committee of representatives of carriers, truckmen, and shippers to work out details of the plan. This committee would agree on cartage rates which, it thinks, should be classified from a trucking standpoint. The shippers would bear the cartage expense beyond the "constructive" station. These trucking charges would be zoned. For example, the first zone might be south of Fifty-ninth Street. If a shipper should request store-door delivery or collection he would be compelled to pay an amount over the New York rate sufficient to pay for the cartage charge, and the truckman would act as the carrier's agent in collecting this charge which would be published in the tariffs. It is conceded that the service would, of necessity, be optional with the shipper.

No definite plan of zoning or subzoning trucking charges was submitted, but it was stated by the principal witness for the Merchants' Association that those details could be worked out in conference. As to the establishment of store-door delivery in Brooklyn or Queens, or at Jersey City, the witness stated that inasmuch as those communities have team-track facilities no economy would result to the carriers through store-door delivery and, therefore, it need not be established. Apparently its position is that unless a community is prepared to show a real economy to the carrier in store-door delivery it is not in a position to ask for the service. This doctrine is indeed startling. It overlooks entirely the protection afforded by the act to competing shippers and localities. The reason, if any, why the carriers could save delivery expense at Manhattan through the store-door plan is because other forms of delivery necessary to reach Manhattan are more expensive than the usual form of delivery. That is a disability growing out of its geographic location. In spite of it, its rates are the same as those to Jersey City. But under this doctrine the Manhattan shipper because of his disability of location would get a service which the New Jersey shipper could not request because he has no disadvantage with which to offset the usual service. It is needless to argue that the Manhattan shipper expects and is willing to pay the cartage expense beyond the place of usual station delivery. The truck at that stage of the journey is loaded at railroad expense, a service which the carrier would not be providing for the Jersey City shipper. The witness concedes that unless the service is made financially attractive to Manhattan shippers, that is, unless they are shown that they can move freight cheaper than through regular stations, they will not use the service.

The railroad executives in New York have given the matter (i.e., store-door delivery) "earnest consideration" but the result of that consideration has been that they do not want to see the service established. It may be due, as their witnesses have stated, to a fear that the service, if established, would be at, or so near to the level of the New York rates, as to cast an unfair cartage burden on the carriers. Or it may be that the west-side lines feel that they could not profitably make cartage arrangements on a fair competitive basis with the New York Central. In any event the carriers oppose the service and our first query must, therefore, be, is it compellable, if desirable in the public interest.

Respondents take the position that they can not be required to establish store-door delivery. They cite *Bills of Lading*, 52 I. C. C. 671, among other authorities, where we said at page 719:

> The duty of railroads in respect of the delivery of property * * * is different from that of express companies. By custom, usage, and upon grounds of impracticability, the old common-law obligation of carriers to make personal delivery to the consignee is no longer applicable to railroads; * * *

See also the *Grand Haven Cartage Case*, 74 Fed. 803. for the distinction between the English and American custom in the matter of cartage. Other authorities are cited by respondents.

It is of course, patent that if store-door delivery is compellable by any tribunal such compulsion must be based upon the common law or, so far as we are concerned, upon some provision of the statute which we administer. It may be taken as settled that, at common law, there is no obligation on the part of a common carrier by railroad to effect personal or store-door delivery of freight. Has the interstate commerce act changed that status? There are, of course, provisions of the act which give to us complete jurisdiction over the service, once it is established by the carriers. For example, we can require the carriers to keep it free from undue prejudice, as we did in the so-called Washington store-door cases. And we can compel publication of the cartage charges in a tariff as terminal charges. *Int. Com. Comm.* v. *Detroit &c. Railway Co.*, 167 U. S. 633, 646; section 6 (1). But nowhere in the act is there even a suggestion that the requirement that carriers must furnish reasonable and adequate terminal facilities is intended to supplement their common-law obligation to such an extent that delivery, at their freight stations or public team tracks is not a complete satisfaction of their lawful obligation. *Int. Com. Comm.* v. *Detroit, &c. Railway Co., supra.*

Store-Door Delivery Can Only Come with Railroad Co-operation

From an examination of the authorities it must be concluded as the law now stands that a carrier can not be required against its wishes to furnish personal or store-door delivery of freight. It seems appropriate to add, however, the further thought that one of the principal practical objections to the establishment of the service in a particular locality, is the danger of creating undue prejudice to competing localities. The experience thus far gained by us in store-door litigation is that communities denied the service are quick to complain of undue prejudice. The New Jersey interests have clearly indicated such a position in this case. In the *Washington Store-door Cases, supra,* the first complaints came from sections of the city not accorded the service. Upon a finding of undue prejudice and the removal of it by discontinuing the service entirely, the next step was a similar and successful attack against the granting of the service at Baltimore. It may be, as forecast in the *Motor Bus Investigation, supra,* that the time will come when store-door delivery will be accepted by carriers and shippers as the logical solution of terminal problems. Learned and experienced minds

have recognized tremendous advantages and possibilities in the service, and the various treatments of the subject, coming as they do from responsible organizations command despect. But that change, under the present state of the law, will only come with carrier cooperation and not with carrier opposition.

The one remaining form of trucking service to be considered is that which may be performed in connection with the operation of inland stations. As indicated, the Erie, Lehigh Valley, and Pennsylvania now provide and purpose to continue inland stations through the medium of a trucking company which acts as their agent in the haulage to and from and the operation of such facilities. But these stations are individual; that is to say, only freight for the operating railroad is received and delivered at the respective stations. The inland stations which the Port of New York Authority advocates will be of a universal character, open for delivery and receipt of freight from all railroads. These stations are to be built by the Port of New York Authority and leased to the railroads. It asks no order from us for their establishment and for that reason it is unnecessary to consider at this time the question of our power to require their establishment or to compel the carriers to equip themselves with motor trucks to serve them.

Three other carriers propose to continue it (i.e., motor truck service) to and from inland stations. At St. Louis, some of the very carriers which desire to restrict service at New York, actively supported a plan similar to that which the New York protestants seek to have inaugurated.

Inland Stations Cost $2.40 Per Ton, Pier Stations $4.57

The Pennsylvania made an estimate of its pier-station costs in the handling of less-than-carload freight, in order to determine the advisability of shifting tonnage from certain piers to other piers. Those costs ranged from $3.91 per ton at Pier 4, to $4.90 at Pier 27, and averaged $4.57 per ton. Less-than-carload freight is now being handled through the present inland station of the Pennsylvania at a cost of $2.40 per ton, and there is every reason to believe that with greater concentration of tonnage this cost could be considerably reduced. We are informally advised that conferences are now being held between representatives of the railroads and of certain of the protestants looking toward the establishment of union or universal inland stations. We express the hope that these conferences shall result in the establishment of such facilities. In view of them, and in order to leave the parties a free hand in solving the problem we make no specific suggestions or recommendations at this time.

Conclusions

We find:

1. That we are without power under the interstate commerce act to require carriers to establish store-door receipt and delivery.

2. That the present operation of constructive-station service and of trucking in lieu of lighterage as practiced by the New York Central, Jersey Central and Baltimore & Ohio can not be sanctioned because of their plain tendency to create violations of sections 2 and 3 of the act, and because said services, as now operated, are not compatible with the provisions of section 15a of the act.

3. That respondents in I. and S. 3100 should be permitted to discontinue the present constructive-station service and to limit the practice of trucking in lieu of lighterage to the interchange of traffic between connecting railroads, and steamship lines, as proposed.

4. That the constructive station now maintained by the New York, New Haven & Hartford should be discontinued because it is in violation of section 2 of the act; and the proposal of the New York Central to continue the practice of constructive lighterage on traffic to and from New England, in order to meet the competition of the said constructive station, should also be denied.

An order will be entered canceling our order of suspension in I. and S. 3100 and discontinuing that proceeding. No order will be entered at this time in the general investigation, but it will be held open for a period of 90 days from the date of this report, pending the filing of tariffs by the New Haven and New York Central in conformity with the finding herein.

Three Commissioners Concur Only in Part

Commissioner Eastman concurred in part, but disagreed that the constructive-station service now maintained by the New Haven violates section 2. Continuing he said:

The object of that section is to protect shippers against unjust discrimination. Here no shippers are complaining of discrimination. There is nothing to indicate that any one is being injured by this service, but on the contrary the evidence is that it meets with general favor. Under such circumstances we should be slow to find upon purely technical grounds that section 2 is violated.

The finding that it is violated rests solely upon *Wight* v. *United States,* 167 U. S. 512. A consideration of that case shows that it is not in point. There a railroad in order to meet the competition of another railroad made a trucking allowance to one shipper which it did not make to another shipper, similarly located except for the competition. The latter complained. It was held that the phrase "under substantially similar circumstances and conditions," as found in section 2, "refers to the matter of carriage, and does not include competition." Here competition does not enter into the picture. The New Haven now holds itself out to deliver freight at the same rate either at Harlem River (One-hundred and thirty-second Street) or at Piers 37 to 42 on the East River. The piers are reached by car float or lighter from Harlem River. The constructive-station service is merely a means of substituting for this water haul a cheaper haul by motor truck, so far as shippers or receivers of freight are concerned who would otherwise avail themselves of the pier service. It is intended to give those shippers and receivers no advantages that they could not in any event obtain by using the pier service; and if perchance it does give them some minor advantages, that is a matter which can be corrected without elimination of the service.

If it is not unlawful under section 2 for the New Haven to haul freight by water from Harlem River to the piers and make delivery there at the same rate as at Harlem River, and no one suggests that this is unlawful, I am unable to see that it is unlawful to substitute for that water service a cheaper service by motor truck which does not enhance the advantages which shippers and receivers of freight may in any event obtain from the pier service. It does not differ in principle from the deliveries which the New York Central makes at the same rate to successive stations in Manhattan along the Hudson River.

Whether or not constructive-station service is subject to section 1 (18) is a close question. Upon the whole I am inclined to think that it is not subject to that paragraph, provided it does not constitute anything more than an alternative means of furnishing service which is already available in another form. That appears to be the situation here.

Commissioner Eastman's Opinion

Commissioner Eastman likewise disagreed with the second conclusion of the majority *supra.* Continuing he said:

The questions before us with respect to this service, as I see them, are, first, whether the proposed discontinuance of the service by certain of the respondents is unlawful and, second, whether the continuance of the service by certain other respondents will be wholly or in any respect unlawful. So far as the first question is concerned, I believe that it depends upon whether this alternative form of service can be eliminated and still leave the shipping public with reasonable and adequate service. Upon this point I am willing to accept the conclusion of those who heard the evidence, that the service which will remain will be reasonable and adequate.

With respect to the second question, compatibility or incompatibility with the provisions of secton 15a is, I believe, immaterial here. We are empowered to investigate economy and efficiency of management, and can make allowances for waste or inefficiency in our regulation of rates, but there is nothing in the law which makes either one or the other unlawful. Nor do I believe that a "tendency to create violations of sections 2 and 3 of the act" is necessarily unlawful. If violations of those sections exist, they are unlawful and must be corrected, but we have no power to condemn a "tendency." If it could be shown that the tendency is irresistible, with the result that violations exist and must inevitably continue to exist, there would be ground for condemnation; but that has not been shown here. I think that the trucking in lieu of lighterage now carried on by the New York Central probably involves violations of section 3, and that the free loading of the trucks by all of the carriers which engage in constructive-station service may also involve a violation; but these are defects which can and should be weeded out. They do not afford ground for requiring the discontinuance of the service as a whole.

In this connection, the fourth conclusion in the summary in the majority report states that the "proposal of the New York Central to continue the practice of constructive lighterage on traffic to and from New England * * * should also be denied." I do not understand that we have before us any application with respect to this service to be granted or denied. The question is whether a continuance of this service by the New York Central will or will not be unlawful. As I see it, continuance

of the service will not in itself be unlawful, although there are probably unlawful features which should be eliminated.

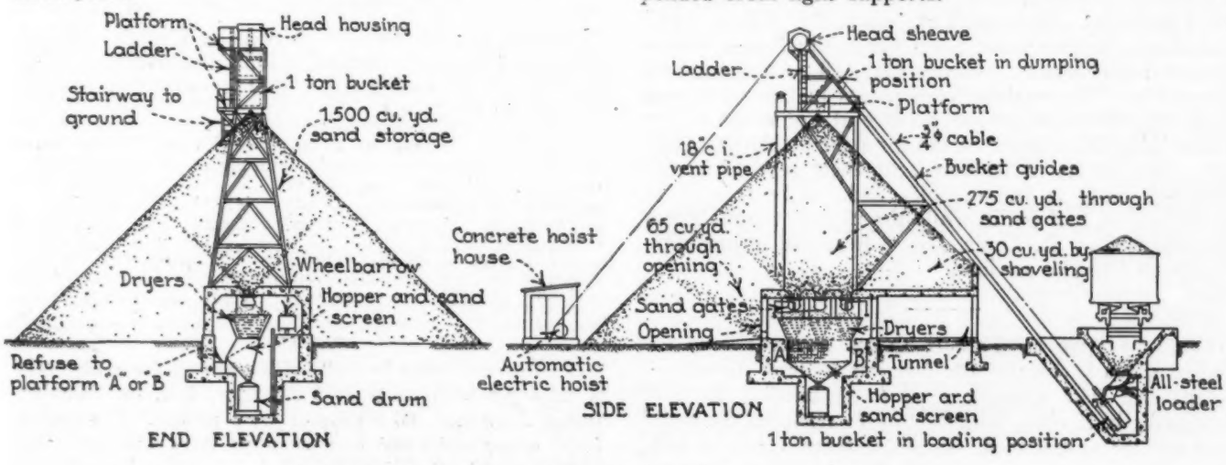
Commissioners Brainerd and Woodlock concurred in part, but held that the opinion of the majority that the present operation of constructive-station service and of trucking in lieu of lighterage as practiced by the New York Central, Central of New Jersey, and Baltimore & Ohio is in violation of certain sections of the act and therefore unlawful.

New Type of Storage for Locomotive Sand

A NEW type of plant for storing and drying green sand for locomotive use has been evolved by the Roberts & Schaefer Company, Chicago, which permits large storage capacity in the open, with the dryers so arranged that much of the sand flows to them by gravity. Thus, in a storage pile of 1,500 cu. yd., it is estimated that 275 cu. yd. will flow to the dryers and that 95 cu. yd. can be shoveled directly into the dryers, leaving 1,130 cu. yd. to be handled by wheelbarrow with a short haul. Other advantages claimed are the limited space required for a large storage capacity and the relatively low cost of the plant.

As will be seen by the accompanying elevations of the plant, on which are shown cross-sections of the concrete structure housing the sand dryers and the dry-sand drum, the sand is unloaded by gravity into a concrete track hopper, whence it passes through a loading gate to a one-ton skip bucket. A steel frame work is provided, one leg of which forms a track for the skip bucket, which is hoisted to the dumping position by a steel cable passing over a sheave at the top of the frame and operated by an automatic electric hoist.

The sand dryers are placed under the roof of the concrete housing in such position that the sand from the storage pile passes through wet-sand gates into the hoppers. The dry sand falls on an inclined screen which permits the fine sand to drop into the sand drum, while the larger particles are diverted to a platform. The dry sand from the drum can be elevated by compressed air to an overhead delivery storage at any desired point.



Cross-Sectional Views of Ground Storage for Locomotive Sand

The Young Unit Heater with Recirculating Box

THE Young Radiator Company, Racine, Wis., has developed and placed on the market a unit heater with a recirculating box for use in shops and storehouses with large floor areas. In these units, the steam is conducted through oblong vertical copper tubes for radiation, with rows of flat copper fins fused to the tubes in a slightly downward slanting position, which start the travel of the heated air toward the floor. The air is forced into the room by electric fans mounted to the rear of the heating unit and adjustable deflectors are provided to send the air in any desired direction. If preferred, the motors for the fans may be furnished with two or three speeds, permitting a rapid increase of temperature at high speed and the maintenance of an even temperature at the lower speeds.

Young Unit Heater with Recirculating Box

The recirculating box draws the cooler air from the floor by the action of the fan, which also forces it over the heating unit and returns it to the room. If preferred, it may be arranged to draw fresh air from the outside, thus serving as a ventilator as well as heater.

The heaters are made in various sizes and may be used with or without circulating boxes as desired, but the box is recommended where slow speed motors are used and the current of heated air is not sufficiently strong to force it to the floor. The heater units without the recirculating box are light in weight, ranging from 65 lb., with a 1/30 hp. fan motor and 565 cu. ft. of air per min. to 280 lb. with a ½ hp. motor and 6000 cu. ft. of air per min., permitting them to be suspended from light supports.

Operators on Pennsylvania Become Weather Forecasters

TELEGRAPH operators at 14 points on the Columbus, Cincinnati, Indianapolis and St. Louis divisions of the Pennsylvania have completed courses in meteorology to enable them to make daily weather forecasts for the use of Transcontinental Air Transport airplanes in rail-air service. These operators were given instructions in thermometer reading, judging

Telegraph Operator on Pennsylvania Reading Thermometer and Barograph Preparatory to Making Weather Report for Rail-Air Service

of wind velocity, estimation of vertical and horizontal visibility and weather forecasting from the appearance of clouds.

Three Reports Each Day

Reports are made three times a day on local weather conditions and are sent to the meteorological service of Transcontinental Air Transport which in turn informs the airplane pilots by station reports and radio of weather conditions in advance of their position. The equipment with which each operator is supplied includes a thermometer and a barograph.

Weather information is collected at Lima, Ohio, Dayton, Cincinnati and South Charleston, Ft. Wayne, Ind., Richmond, Knightstown, Scottsburg, Vincennes, Almeda and Terre Haute; Hervey City, Ill., Altamont and Greenville. The reports from points in Ohio are sent to the Pennsylvania telegraph office at Columbus, Ohio, where they are relayed to the air field at Port Columbus. The points in Indiana sent their reports to the telegraph office at Indianapolis, Ind., to be relayed to the airport at that point, while the reports from Illinois are collected at St. Louis, Mo., where the information is teletyped to the air field.

THE COMMITTEE ON FREIGHT CLAIM PREVENTION of the Freight Claim Division of the American Railway Association, reports that joint committees on rough handling are now functioning in 35 cities, principally in the southeast, the southwest and the central west. In the southeast a general committee of operating and mechanical officers has been organized and covers practically the entire territory.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended August 10 totaled 1,090,616 cars, a decrease of 13,577 cars as compared with the preceding week but an increase of 46,348 cars over the corresponding week of 1928 and of 40,977 cars over 1927. Increases as compared with the corresponding weeks of the past two years were shown in the loading of grain and grain products, coke, forest products, ore and miscellaneous freight. Coal and merchandise loadings were above the comparable 1928 week but below 1927 while live stock loading was less than both 1928 and 1927. All districts except the Southern and the Pocahontas reported increases over the figures reported for the past two years. The loadings of the Southern district were below both the corresponding 1928 and 1927 weeks while those of the Pocahontas district were slightly below 1927 but above 1928. The summary as compiled by the Car Service Division of the American Railway Association is given in the following table.

Revenue Freight Car Loading

Week Ended Saturday, August 10, 1929.

Districts	1929	1928	1927
Eastern	244,525	239,332	240,513
Allegheny	225,804	212,775	210,795
Pocahontas	62,053	57,593	62,950
Southern	141,201	143,255	149,715
Northwestern	179,199	157,121	159,714
Central Western	157,042	155,766	150,499
Southwestern	80,792	78,426	75,543
Total West. Dists.	417,033	391,313	385,756
Total All Roads	1,090,616	1,044,268	1,049,639
Commodities			
Grain and Grain Products	64,123	58,024	53,611
Live Stock	22,042	23,680	27,394
Coal	161,464	161,229	171,108
Coke	11,743	9,337	9,747
Forest Products	68,501	66,012	68,312
Ore	78,953	60,557	59,699
Mdse. L.C.L.	259,328	257,018	259,421
Miscellaneous	424,462	408,411	400,347
August 10	1,090,616	1,044,268	1,049,639
August 3	1,104,193	1,048,821	1,024,938
July 27	1,101,061	1,034,326	1,044,697
July 20	1,078,695	1,033,843	1,012,585
July 13	1,064,632	1,024,925	1,017,394
Cumulative totals, 32 weeks	31,944,967	30,498,903	31,508,478

The freight car surplus for the period ended August 8 averaged 180,954 cars, a reduction of 16,969 cars as compared with the preceding week. This included 87,826 box cars, 53,095 coal cars, 22,940 stock cars and 11,980 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended August 10 totaled 65,552, a decrease of 4,348 from the previous week and of 699 from the corresponding week in 1928.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
August 10, 1929	65,552	37,724
August 3, 1929	69,900	38,316
July 27, 1929	69,933	38,450
August 11, 1928	66,251	38,134
Cumulative Totals for Canada		
August 10, 1929	2,120,332	1,329,899
August 11, 1928	2,066,634	1,245,732
August 13, 1927	1,942,172	1,206,983

THE NORTH FLORIDA DIVISION of the Seaboard Air Line held its third annual reunion at Tallahassee, Fla., on Saturday, August 3. About 500 employees were present. Besides the picnic, games and usual entertainments there was a meeting presided over by Superintendent G. L. Hurley, at Leon County Court House in the afternoon.

Communications and Books

What Was the Date of the First R.P.O.?

NEW YORK.

TO THE EDITOR:

I notice in your issue of June 15, page 1389, that one phase of the oft-repeated story of the first railway post office is still going the rounds; the story that the first railroad car in which letters were distributed on the road was run between Hannibal, Mo., and St. Joseph in 1862.

This narrative as well as that by a former postmaster general, Thomas L. James, (in Scribners' book on the American Railway, 1889) telling of the part played in this development by W. A. Davis and by Colonel G. B. Armstrong, is probably all right except that both of them ignore the fact that traveling post offices had been used in this country for some years before 1862; but it is to be noted that Postmaster General James gives credit to Great Britain. He says that our people got the idea from Canada and that the Canadians got it from England.

The fact that the distribution of letters on moving trains was a practice of long-standing in this country has not been very widely published; but I, myself, well remember seeing such a car on its regular trips between Boston, Mass., and Albany, N. Y., before the Civil War. Having this fact in mind and being on the lookout for evidence as to dates, I came across, some years ago, a letter which was mailed at

Memento of the Boston & Albany Railway Post Office A.D. 1853
Reduced about one-third in width and height..

West Brookfield, Mass., a station between Boston and Albany, in January, 1853, and the superscription of that letter, with the three-cent stamp and the postmark, will afford unmistakable evidence of the year. It is shown in the accompanying engraving. This "face" is not an envelope; it is the outside of a folded letter, a blue sheet, letter size. Envelopes had not then come into universal use, and this sheet was closed with a wafer on the back side.

The date shows nothing but "JAN." However, the year is fixed by external evidence. Miss Fanny Nichols, the addressee, was a pupil in the Normal School at Westfield, and on June 13, 1853, she became the wife of Sanford Adams, the writer of the letter, and thenceforth was Fanny Adams.

It is to be noted that the name "BOSTON & ALBANY" is the name of the postal route, not that of the railroad. Prior to 1867, this line was composed of the Boston & Worcester, 44 miles, and the Western Railroad, 156 miles.

The mail car of those early days was a part of the baggage car or of the second-class passenger car, partitioned off. The fixtures, as I remember the car, consisted of a very simple rack of pigeon holes and a pine counter on which could be poured out a bagful of letters. The mail clerk—one of the individuals that I happen to remember—was a thin, gray-bearded man, looking somewhat like a veteran schoolmaster.—B. B. ADAMS.

New Books

Methods of Compiling Statistics of Railway Accidents. Bound in Paper. 82 pages. 6½ by 8¾ in. Published by the International Labor Office, Geneva, Switzerland. Price 50 cents. Distributed in America by the World Peace Foundation, 40 Mount Vernon Street, Boston, Mass.

This is No. 15, Series N, of studies and reports made by the International Labor Office. It deals with forms for classifying railroad accidents according to the class of risk, the exposure and the causes. Every feature of classification is discussed in great detail, but the discussion is confined to industrial risks of employees only. An appendix contains notes on the manner of recording accidents in the different countries of Europe and in India, Japan, Australia, Canada and the United States.

All-India Time-Table, 633 pages 11 in. by 8¼ in. Paper bound. Published for the Railway Board of India by the Great Indian Peninsula Railway, Bombay. Price, One Rupee.

The present volume is the first issue of this new and comprehensive time table to transport services in India. It is designed to cover the entire passenger-carrying railway services of that country, Burma and Ceylon as well as steamship services out of Bombay and numerous highway motor coach runs. The volume is illustrated with maps and in general style and content is somewhat along lines followed by the "Official Guide," familiar monthly time-table reference book of America. In addition to the information as to times, however, fares and other pertinent travel data are included.

The Distribution of Power to Regulate Interstate Carriers between the Nation and the States, by George G. Reynolds. Bound in cloth, 414 pages, 9 in. by 6 in. Published by the Columbia University Press, New York. Price $6.50.

The book is a discussion of the manner in which the control of interstate carriers is divided between the state and federal governments and an outline of the process of judicial interpretation and legislative activity by which the present distribution of this regulatory power has gradually evolved from the provisions of the United States constitution. It thus includes a detailed analysis of many decisions of the United States Supreme Court since 1824, when the opinion, written by Chief Justice Marshall, in the case of Gibbons v. Ogden gave careful consideration to the meaning of the federal "power to regulate commerce . . . . among the several states" and sustained the right of Congress to authorize interstate navigation wholly within the territorial waters of the adjacent states of New York and New Jersey, contrary to the laws of the former.

The introductory chapter considers the economic events leading to the adoption of the constitution. Upon examination of this instrument and consideration of its framers' views, as deduced from their writings and pronouncements, the author finds that, "While expressly establishing the supremacy of federal legislation where state laws should conflict therewith, it (the Constitution) still left room for state action."

From this the book continues to survey the various judicial decisions and acts of Congress whereby the line of separation between state and federal action has been drawn. The subsequent discussion is divided conveniently into chapters covering in turn the following periods: From 1789 to 1887, or from the adoption of the Constitution to the passage of the Interstate Commerce Act of 1887; from 1887 to 1920, wherein Congress began and developed its policy of subjecting interstate carriers to considerable regulation, and from 1920 to 1927, when the influence of the Transportation Act of 1920, which greatly extended the scope of federal intervention, has been noted. Final chapters are devoted to a consideration of federal laws affecting state power and a discussion of the present distribution of regulatory power and proposed changes.

The author throughout shows the growing predominance of

federal power and the restraints thereby imposed upon states. While he points out that his role in the present instance is to promote a clear understanding of the issues rather than to advocate either side of the controversy, he nevertheless, in the introduction, states his belief that "the problem of the regulation of carriers engaged in interstate transportation is national, not local, requiring in its more important aspects a uniform system of regulation controlled by a single authority, the federal government."

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Annual Statistical Report of the American Iron and Steel Institute. Statistics on the product of the principal iron and steel products in the United States during 1928, also brief data on imports and exports and some tables of prices. 119 p. Pub. by the American Iron and Steel Institute, New York City.

Contests over Small Rails Afford Investment Opportunities, by Pierce H. Fulton. Investment possibilities among some of the smaller roads in the coming autumn. Magazine of Wall Street. August 10. p. 663-64, 700.

Der Neuzeitliche Waggonbau, by Franz Lehner. An illustrated treatise on modern railway car construction and repair work, relating of course to European practice primarily. Estimates, bids, superintendence of work as well as steps in construction are discussed. 614 p. Pub. by Laubsch & Everth, Berlin, Germany. 25 Reichsmarks.

Note on the Construction of Godavery Bridge, Kazipet-Belharshah Railway, by R. V. Gregory. Technical Paper no. 268, Government of India Railway Board. "Where the Kazipet-Belharshah Railway crosses the Godavery, the river is 3,800 feet in width from bank to bank, and drains a catchment area of 39,600 square miles. It has been bridged the full width of the river, the bottom of girders being kept 12 ft. above the highest recorded flood level . . . " p.l. Details of construction, costs, and descriptions of special machinery necessitated by construction problems. Illustrated. 25 p. 13 plates. Pub. by Central Publication Branch, Government of India, Calcutta, India. 5 shillings.

Who Bears the Freight Rate?, by C. S. Morgan. "Reprinted from a proposed report by Examiners of the Commission (Docket 17,000, Part 7)". The author is Economist, Interstate Commerce Commission. 12 p. Pub. by Committee on Public Relations of the Eastern Railroads, New York City. *Apply.*

Periodical Articles

The Bus, A New Giant in Transportation, by Lewis Freeman. Experiences of a transcontinental traveler by bus. American Magazine, September 1929, p. 42-45, 81-84.

Conflict in Legislation Respecting Railroad Rates, I, by Kenneth F. Burgess. The Transportation Act 1920 and the Hoch-Smith Resolution. Harvard Business Review, July 1929, p. 423-431.

The Lake Cargo Coal Case, by A. S. Howe, Jr. "This paper attempts a discussion of certain economic issues raised by the Lake Cargo Case." p. 452. Harvard Business Review, July 1929, p. 453-461.

Les Locomotives Articulées Actuelles, by Lionel Wiener. If it is too warm or something to read through this comprehensive article on present-day articulated locomotives, much may be learned through looking at the pictures and diagrams. In the first part illustrations and tables showing the railroads using Meyer-Kitson, Fairlie, Golwé, Garratt, Shay, and Schwartzkopff types are given, while in the second part the discussion is given over to the Mallets in this country and elsewhere. Revue Générale des Chemins de Fer, July, 1929, p. 3-31, and August 1929, p. 109-130.

Railway Motive Power—A Few Points on the Present Trend of Design, by W. E. Barnes. " . . . ten years ago the railways were purchasing tractive effort, today they are purchasing power." p. 459. Engineering Journal [Canada], August, 1929, p. 459-462.

Looking Backward

Fifty Years Ago

The chief engineer of the Salina & Southwestern [now part of the Union Pacific] has attained an enviable record in the construction of that road between Salina, Kan., and Lindsborg, 22 miles. Grading was started on June 10, track laying was begun on June 12 and a train was operated over the line on June 30. —*Railway Age,* August 21, 1879.

The representatives of 26 railway systems, aggregating 15,000 miles of line, have joined in an agreement to discontinue the practice of contracting for the shipment of any special quantities of freight. The "contract system" has been the most fruitful cause of railway wars, as it has given almost unlimited opportunities for evading agreements among roads to restore and maintain rates, the pretext being that outstanding contracts to an always unknown amount must be filled. —*Railway Age,* August 21, 1879.

The Chicago & North Western has adopted the plan, now becoming common, of charging the cost of replacing iron track with steel to operating expenses, instead of increasing the apparent net earnings by entering it to construction or capital account. Its report for the past year shows a charge of $363,554 for the difference between iron and steel in track renewals, and of $246,055 for grading, ballasting and other expenses accompanying these renewals, which might have been kept out of the operating expense account if it had been necessary to improve the showing. —*Railway Age,* August 21, 1879.

Twenty-Five Years Ago

During a recent test on the Lake Shore & Michigan Southern [now part of the New York Central] to determine the maximum tonnage rating for a consignment of new locomotives, a record was established for ton-miles per hour. The locomotive used had 23-in. by 30-in cylinders and had a weight of 200,000 lb. on drivers. A train having a total weight of 5,800 tons was hauled from Youngstown, Ohio, to Astabula, 63 miles, in about four hours, producing 91,000 ton-miles per hour. —*Railway and Engineering Review,* August 27, 1904.

Ten Years Ago

The Class I railroads under federal control during the first six months of this year earned 39.8 per cent of their standard return as compared with 38.4 per cent during the first half of 1918. The New England district had a deficit both years and the Central Western region came nearer to earning its standard return than any of the others, but its percentage was only 63.1.—*Railway Age,* August 22, 1919.

Thomas De Witt Cuyler, chairman of the Association of Railway Executives, appeared before the House Committee on interstate and foreign commerce, on August 20, on behalf of 94 per cent of the railroad mileage of the country. He presented an outline of principles which the carriers believed should be incorporated in legislation for the return of the roads to private operation. This included assurance of adequate rates, exclusive of regulation of rates by the Interstate Commerce Commission, greater unification of public regulation, consolidation and the creation of a Federal Transportation Board co-ordinated with the commission.—*Railway Age,* August 22, 1919.

Odds and Ends of Railroading

The "Best Friend"

Cecil Matthews, purchasing agent of the Matthews Electrical Supply Company, Birmingham, Ala., calls attention to the fact that the duplicate of the locomotive "Best Friend," reproduced in the issue of July 20, was built at the Findlay shops of the Southern, at Birmingham.

Giraffe Cars

The Boston & Maine has settled once and for all the question of how a well-bred giraffe should travel. Two special flat cars with underslung floors, have been borrowed and have been fitted with a padded neck rest. The two giraffes will be shipped from Nashua, N. H., where they have been staying since their arrival from Tanganyika, to the Detroit Zoo. The male is 14 ft. high, and the female 13½ ft.

Another Executive Service Record

On page 216 of the July 20 issue of the *Railway Age,* mention is made of the service record of H. F. Smith, senior vice-president of the Nashville, Chattanooga & St. Louis, who has spent 64 years in railroad service. You may be interested in the record of J. Q. Van Winkle, assistant to the vice-president and formerly general manager, of the Cleveland, Cincinnati, Chicago & St. Louis, who entered the service March 1, 1861, and is still actively participating in the work of the Big Four, having completed his 68th year of service in March, 1929.—J. A. DAILEY, Secretary, Board of Pensions, New York Central.

The Chinese Eastern

The present misunderstanding between Russia and China over the Chinese Eastern Railway, which at one time seemed extremely serious, is but a chapter in the turbulent history of that railway, according to a bulletin issued by the National Geographic Society, which is quoted, in part, below:

Its construction was prompted by China's desire to avenge her defeat by Japan; it was born in the terror of the Boxer rebellion; christened and stunted by the Russo-Japanese war; starved by the plague of 1910; disrupted by the world war and the Russian revolution, and munched inch by inch by the Chinese dragon ever since 1919.

The Chinese Eastern was one of the few railroads of the world operated jointly by white men and yellow men. Half the board of directors has been Russian, half Chinese; part of the employees Russian, part Chinese. Chinese armed guards ride every train. Chinese and Russian 'red caps' rustle baggage at the stations.

The Chinese Eastern was opened in 1903, but through traffic to Vladivostok did not begin until 1905. That part of the Trans-Siberian traversing Manchuria is called the Chinese Eastern Railroad. The distance from Manchuli, the western border station, is 925 miles, or approximately the rail distance between Chicago and New York.

Once they had reached Vladivostok, the Russians were not much better off for a port than before. Ice makes Vladivostok practically inaccessible to steamers six months of the year. So when they had crossed Manchuria, minions of the czar made a new agreement for a 584-mile branch line to the Liaotung peninsula, where they found in Dalny a truly ice-free port, which they fortified with Port Arthur. The Harbin-Dalny branch line opened in June, 1903. The Russo-Japanese war broke out eight months later. By the terms of the treaty signed at Portsmouth, N. H., Russia lost to Japan the port of Dalny (now Dairen), and 437 miles of the branch line as far north as Changchun, or Kwanchengtze.

Japan took no chances. It immediately rebuilt its newly acquired railroad to standard gage. The Chinese Eastern and the Trans-Siberian use the 5-ft. gage. The result has been that Changchun has become a city of 50,000, because all freight moving from one line to the other must change cars. The Japanese have kept the South Manchurian, as it is called, strictly in their own hands, employing no Chinese officials and inviting no Chinese on the board of directors.

Manchuria, when the Russians built the Chinese Eastern, was as wild and wooly as Kansas in the '30s. Slav engineers wanted to keep it that way. The Trans-Siberian was built for Russian trade and Russian armies, not Manchurian business. Freight rates were scaled accordingly.

Slav engineers deliberately missed Manchurian communities. The walled town of Tsitsihar is still 15 miles off the main line. Kirin, capital of a province, was passed by. They thought of the Chinese Eastern as a thousand-mile Russian bridge across Manchuria.

Complete Russian towns were built along the right of way for Russian employees. The railroad provided everything: station, telephone system, steamer service, homes, schools, churchs, clubs and theaters and—most significant of all—civil government. Where two or three mud huts stood on the plain, Russian engineers built the railroad junction called Harbin. Today it is the trade capital of northern Manchuria, a town of 350,000 and known as the only white city in the world run by yellow men.

Engineers left out two important items from their railroad specifications—the Russian revolution and the Chinese migration to Manchuria. The first resulted in China's getting a real half interest in the profits and the operation of the road. The second converted the Chinese Eastern from a bridge across Manchuria into a main shaft tapping the farm riches of the new granary of the orient.

The Chinese Eastern uses much American equipment. American locomotives drag their passenger expresses and soy bean freights. American box and gondola freight cars by the hundreds roll on the rails.

John F. Stevens went to Manchuria by agreement between the United States and Russia in 1918 to supervise the Chinese Eastern. He took with him 100 American engineers, and the operating system they devised for the railroad is largely that by which it runs now.

The latest annual figures, 1927, for the Chinese Eastern, gathered by the department of commerce, show that 4,380,440 tons of freight originated on the line; 538,436 tons were received from other lines. The Soviet government's discouragement of imports helps make the latter figure so small. Rolling stock in operation totaled 134 locomotives, 388 passenger cars, 5,900 freight cars. Operating revenues 1927; 59,795,797 gold rubles (one ruble equals 51½ cents); other revenues 178,715 rubles; operating expenses 40,108,465 rubles; other operating expenses, 3,862,736 rubles.

The Chinese Eastern is said to have cost Russia about $200,000,000, borrowed largely from French bondholders. Terms of the concession permit purchase of the railroad by China at the end of 30 years, that is, in 1939, and 80 years after completion, China is to receive the road without cost.

New railroad construction in Manchuria appears to sap the usefulness of the Chinese Eastern. The Chinese themselves are extending the Peiping-Mukden Railroad north. One sector has already cut the Chinese Eastern at Tsitsihar, west of Harbin. Another cuts it on the east at Hailin. Other Chinese roads financed by Japan are pushing through eastern Manchuria to a new Japanese port in northern Korea, which will compete with Vladivostok and Dairen. Equally significant is a Chinese road already built 150 miles north of Harbin. It is not of Russian gage common to Harbin, but is of standard gage.

The main trend of Manchurian trade is north and south. Unless soviet Russia finds it necessary to extend her Trans-Siberian trade, the famous Chinese Eastern seems doomed to a future of local freight service. Apparently, it is not vital to Chinese progress in Manchuria.

NEWS *of the* WEEK

The Southern Pacific "Sunset Limited" leaving El Paso, Tex.

THE CAR REPAIR SHOPS of the Trinity & Brazos Valley at Teague, Texas were damaged by fire on August 10. The loss is estimated at $74,000.

THE CAR FOREMEN'S ASSOCIATION OF CHICAGO will hold its next meeting on Monday evening, September 9, at the Great Northern Hotel, Chicago. There will be a paper on Wheels, Passenger and Freight, by C. T. Ripley, chief mechanical engineer of the Atchison, Topeka & Santa Fe.

THREE MEN WITH REVOLVERS held up a two-car local electric suburban train of the Illinois Central at Chicago on August 9, shot a guard to death and after grabbing a money bag from a collector, forced the motorman to stop at a point between stations; and they escaped with $4,000. The bandits followed the collector, who had completed his daily collection, from suburban stations, into the train at Randolph street and waited until it had reached Twenty-third street before committing the robbery.

A GROUP LIFE INSURANCE PLAN under which new employees entering the service will be rated in accordance with their age, making different premium rates for different ages, is now in force in the shops of the General Electric Company, the plan heretofore in effect having been modified as of September 1, to include this provision. The amount of free insurance given by the company to new employees will vary according to the age of the person at the time he enters the service. The regular pensions given by the company without cost to employees are not affected by this change. These pensions are based on 1½ per cent of the average earnings of the employee for the last ten years of his service, multiplied by the number of years that he has served. Also, under the revised pension plan, new employees will set aside various sums. The group life insurance policy of the General Electric Company for its 80,000 employees now amounts to more than one hundred and sixty millions.

Steel Is Laid To Sherritt

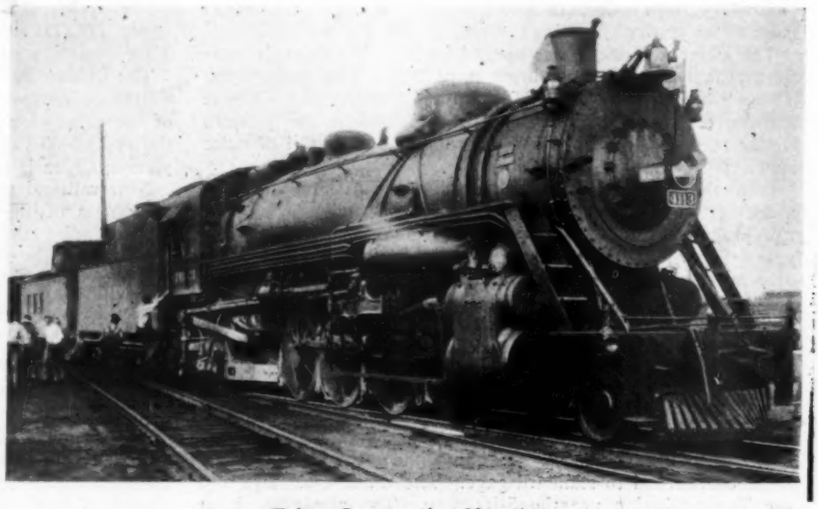
The last piece of steel has been laid on the branch line of the Hudson Bay Railway (to be operated by the Canadian National) to the Sherritt Gordon, the large copper-zinc mine in northern Manitoba. The completion of this new branch has been rushed to enable mine operators to get their heavy equipment into the property so that installation may proceed during the winter months. Ballast gangs are busy giving the line the first lift on gravel and with continuing good weather conditions it is expected that the line will be turned over to the Canadian National for operation early this fall.

At the neighboring Flin Flon property, the Hudson Bay Mining & Smelting Company is rapidly proceeding with its extensive development work, according to the natural resources department of the Canadian National. The branch line to this property was completed last month.

Locomotive Endurance Run Established on Frisco

Locomotive No. 4113, Mikado type, of the St. Louis San Francisco, on August 13, completed a 25-day endurance and fuel test and thereby established a record run of 7,350 miles with only the necessary stops for water, fuel and switching and with a continuous fire. The locomotive was fired in the Kansas City (Mo.) yards on July 19 and started for its goal which was three round trips will full load of freight between Kansas City and Birmingham, Ala. On August 3 the third trip was completed and the goal was then advanced to five trips. The endurance run was terminated because of a federal government regulation which provides that all locomotives must undergo inspection and be placed in the shops at least once every thirty days.

During the run the locomotive, weighing 560,000 lb., was under steam 587 hours, used 1,500,000 gal. of water, 975 tons of coal; averaged 55 cars per train; and accomplished 13,780,749 gross ton miles. It pulled full tonnage always and on several trips excess tonnage. Only one delay was encountered during the entire trip, that being due to a slight accident to a train ahead. The engine itself caused no delays and the road foreman said that it was in as good a condition at the conclusion of the run as at the start. The coal was a mixture of 80 per cent Alabama coal and 20 per cent Kansas. The run averaged 320 miles a day, and its last trip was 3½ hr. ahead of time, with 3,746 tons. The fire was built in the boiler at 3 p. m. on July 19 and was extinguished at 3 a. m. on August 13—24½ days later. A record of 3,500 miles was made by a Great Northern locomotive in 1927.



Frisco Locomotive No. 4113

Locomotives in Need of Repair

Class I railroads, on August 1 had 7,681 locomotives in need of repair or 13.4 per cent of the number on line, according to the Car Service Division of the American Railway Association. This was a reduction of 544 compared with July 15, when there were 8,225 or 14.3 per cent.

Locomotives in need of classified repairs on August 1 totaled 4,205 or 7.3 per cent, a reduction of 221 compared with July 15, while 3,476 or 6.1 per cent were in need of running repairs, a reduction of 323 compared with July 15. On August 1 there were 5,306 serviceable locomotives in storage compared with 5,414 on July 15.

Derailment at Henryetta, Oklahoma

Thirteen persons were killed when St. Louis-San Francisco passenger train No. 118, enroute from Fort Worth, Tex., to Kansas City, Mo., struck an open switch and was derailed at Henryetta, Okla. on August 18. Investigation showed evidence of malicious tampering with the switch, the switch lock being found in some weeds several hundred feet away. Eleven of the people killed were negroes who were riding in the forward section of the chair car and who were scalded to death by steam from the locomotive boiler. The chair car was thrown across the track while the express and baggage car came to rest in an upright position partly in the ditch.

C. & N. W. Athletics

The Chicago & North Western system athletic association held its annual track and field meet at Evanston, Ill. on August 17. The meet included a baseball game between the Black Hills division team of the North Western and the Nebraska division team of the C. St. P. M., & O. for the North Western system championship. Track and field events, including 120, 440 and 880 yard and mile runs, high jump, broad jump, half-mile relay, and medley relay, shot put and discus throw were staged for individual and team championships. A horseshoe tournament drew large entries from every division on the system. A trap-shooting meet with 61 entries in the singles, two-man and five-man teams from six states, was staged in the morning at the traps of the Lincoln Park Gun Club.

Master Blacksmiths Meet at Detroit

Approximately 200 members and guests were in attendance at the opening sessions of the thirty-third annual convention of the International Railroad Master Blacksmiths' Association held at the Fort Shelby Hotel, Detroit, Mich., August 20-22, 1929. During the first day's session papers were presented on the subject of autogenous welding and oxygraph machine cutting. During the discussion of these papers W. J. Wiggin of the Boston & Maine, Billerica shops, presented about seventy lantern slides showing examples of the variety of work which can be done with the shape-cutting machine, as well as examples of many difficult locomotive welding jobs. The session resolved itself into a discussion primarily of the relative merits of manufacturing locomotive rods by the shape-cutting machine and by forging them under the hammer. The remarks of some of the members indicated a reluctance to voice approval of this newer method of rod making from the standpoint of safety, while others indicated the successful adoption of the method in the shops of certain progressive railroads.

In addition to the above-mentioned papers there were several papers presented at later sessions dealing with the heat treatment of steel, machine forging, spring making and reclamation.

B. & O. To Open New Station in New York

The Baltimore & Ohio, on August 26, will open a new passenger station at Columbus Circle, New York City, to serve the patrons of its train-side motor coach service operated between the Jersey City terminal of the Central of New Jersey and New York City proper.

This Columbus Circle station is the fourth established by the B. & O. in Greater New York since the inauguration of its train-side motor coach service. The others are the Waldorf-Astoria station at 19 West Thirty-third street, the Forty-second street station which is on the ground floor of the new Chanin Building opposite Grand Central Terminal and the Joralemon street station in Brooklyn. The Columbus Circle station will be furnished similar to the others and will include a ticket office, waiting room, and baggage checking facilities. The route to the new station will be via the ferry from the Jersey City terminal to Twenty-third street, thence along Eighth avenue to the station. A stop will be made at the Lincoln Hotel, Eighth avenue and Forty-fourth street.

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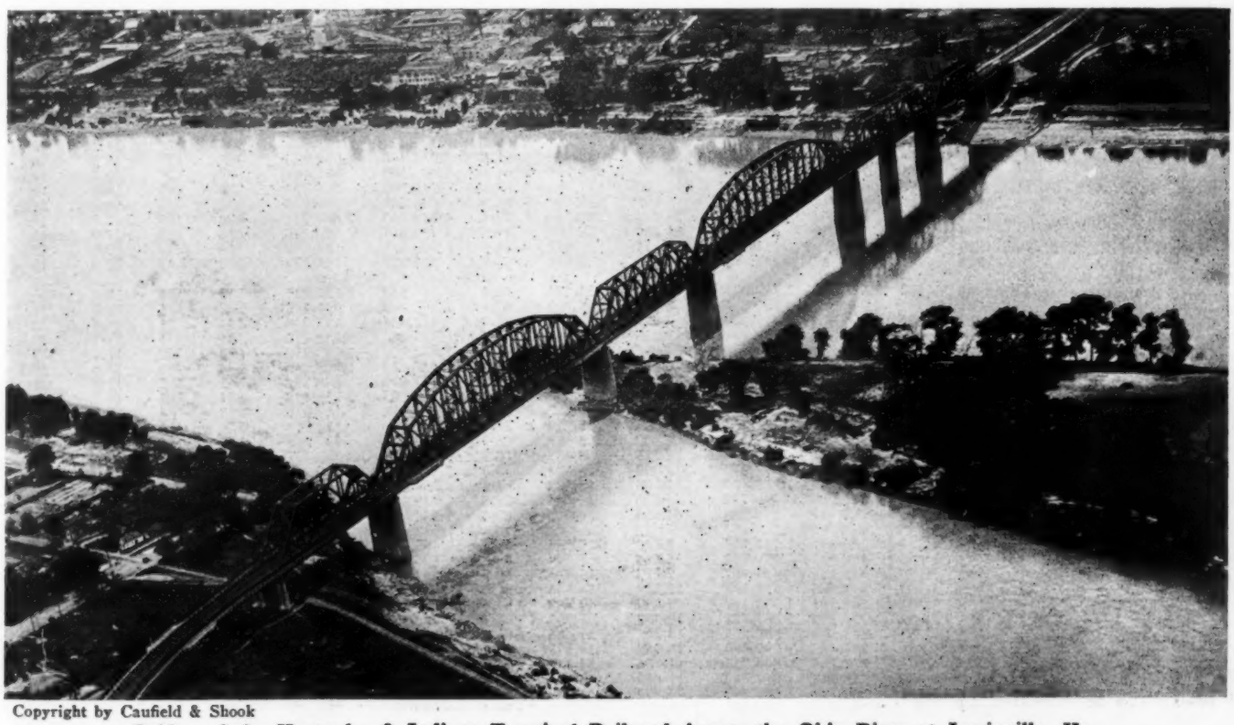

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Bridge of the Kentucky & Indiana Terminal Railroad Across the Ohio River at Louisville, Ky.

Operating Statistics of Large Steam Railways — Selected Items for June, 1929, Comp

Region, road and year		Average miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross. Excluding locomotives and tenders	Ton-miles (thousands): Net. Revenue and non-revenue	Average number of locomotives on line: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:													
Boston & Albany	1929	407	199,017	210,465	20,465	5,089	67.6	261,472	95,876	99	24	19.5	41
	1928	407	184,055	195,924	21,314	5,080	67.6	257,308	93,656	96	23	19.4	33
Boston & Maine	1929	2,059	373,591	434,309	55,079	13,017	71.2	642,753	249,534	250	33	11.5	53
	1928	2,074	392,079	476,219	47,492	12,191	69.2	612,583	233,777	272	47	14.7	47
N. Y., New H. & Hart.	1929	2,103	492,782	565,237	42,124	16,305	66.6	856,857	330,101	281	69	19.6	14
	1928	2,122	540,551	603,440	34,320	16,136	65.8	849,716	331,174	316	52	14.1	51
Great Lakes Region:													
Delaware & Hudson	1929	375	320,153	428,187	46,508	10,295	62.4	618,220	286,705	243	28	10.3	83
	1928	875	297,497	402,186	47,753	9,235	61.9	558,643	250,347	248	36	12.8	100
Del., Lack. & Western	1929	998	488,036	541,194	61,539	17,493	67.5	967,350	395,688	242	58	19.5	24
	1928	998	514,650	576,064	64,905	16,619	66.5	940,083	391,927	255	56	17.9	28
Erie (inc. Chi. & Erie)	1929	2,317	862,076	922,479	64,682	38,927	64.0	2,287,209	921,647	383	106	21.6	26
	1928	2,317	854,334	924,145	83,749	36,598	63.1	2,153,121	866,767	416	112	21.3	49
Lehigh Valley	1929	1,343	528,738	578,523	63,383	17,535	65.1	1,042,295	451,960	282	84	22.9	52
	1928	1,346	515,392	563,078	61,650	16,041	64.2	949,716	406,757	347	93	21.1	72
Michigan Central	1929	1,822	548,409	549,456	17,472	19,893	61.2	1,111,065	386,484	193	37	16.2	17
	1928	1,822	548,143	552,632	14,337	19,133	60.2	1,081,950	376,107	201	70	25.8	28
New York Central	1929	6,467	1,990,934	2,189,525	159,500	79,631	61.9	4,773,269	2,016,323	985	345	26.0	192
	1928	6,459	1,947,028	2,170,133	150,144	76,071	62.5	4,531,725	1,893,172	1,024	359	26.0	273
New York, Chi. & St. L.	1929	1,665	659,754	670,579	6,016	21,851	63.2	1,230,065	455,270	199	65	24.7	27
	1928	1,665	587,333	595,198	6,641	19,647	62.2	1,097,226	400.861	225	59	20.8	65
Pere Marquette	1929	2,178	459,854	464,920	5,463	12,056	62.9	713,605	303,577	181	32	15.0	4
	1928	2,181	397,055	402,202	5,467	9,941	62.0	586,766	244,057	176	40	18.7	17
Pitts. & Lake Erie	1929	231	136,284	137,387	1,806	5,014	63.8	386,074	222.803	52	12	18.9	11
	1928	231	118,301	121,292	1,996	4,514	62.9	374,655	216,771	53	18	25.2	10
Wabash	1929	2,497	842,944	876,026	13.889	25,931	64.7	1,463,227	543,767	287	68	19.2	17
	1928	2,497	758,947	789,379	12,547	23,212	63.5	1,311,619	480,034	305	64	17.3	64
Central Eastern Region:													
Baltimore & Ohio	1929	5,536	1,989,702	2,348,991	161,110	60,460	62.1	4,014,764	1,880,248	1,010	186	15.6	94
	1928	5,534	1,876.380	2,198,611	166,031	56,303	60.8	3,746,004	1,744,405	1,059	198	15.8	177
Central of New Jersey	1929	691	255.852	276,337	45,941	7,419	58.7	490,831	222.064	174	34	16.1	31
	1928	691	252.354	271,634	44,791	7,345	59.0	475,963	218,359	176	38	17.6	30
Chicago & Eastern Ill.	1929	946	237,927	238,693	2,518	6.825	66.1	391,177	166.645	90	73	44.9	24
	1928	945	231,969	232,377	3,006	6,178	63.6	362,991	153,033	117	52	30.6	47
Clev., Cin., Chi. & St. L.	1929	2,371	745,714	773,306	17,456	24,893	61.1	1,578,282	702,210	312	126	28.7	25
	1928	2,370	712.245	736,578	17,256	22,953	60.3	1,474,436	655,639	320	112	25.9	59
Elgin, Joliet & Eastern	1929	453	143,726	151,535	6,179	4,140	63.7	310,631	165,600	78	10	11.4	1
	1928	461	128,979	135.282	5,334	3,629	63.0	273,714	140,800	77	13	14.3	3
Long Island	1929	400	49,344	53,969	14,448	575	53.5	38,761	14,876	37	5	11.0	...
	1928	396	50,082	50,522	14,180	563	52.8	38,573	14.622	56	11	16.3	...
Pennsylvania System	1929	10,738	4,109,819	4,729.090	435,265	151,895	64.0	10,040,497	4,668.830	2,654	254	8.7	576
	1928	10,758	3,943,140	4,483,786	398,038	139,636	63.9	9,031.718	4,118,553	2,795	343	10.9	785
Reading	1929	1,451	569,582	630,676	49,358	17,112	61.4	1,149,646	557,676	334	58	14.8	59
	1928	1,416	592,833	652,910	53,969	16,221	59.5	1,118,055	541,236	331	75	18.4	59
Pocahontas Region:													
Chesapeake & Ohio	1929	2,732	1,061,993	1,139,338	44,678	39,021	57.2	3,114,896	1,682,328	532	93	14.8	77
	1928	2,723	1,029.238	1,105,710	41,860	35,710	56.8	2,855.264	1,533,032	544	95	14.8	97
Norfolk & Western	1929	2,230	874,777	986.030	36,912	34,138	58.5	2,830.649	1,508,497	468	52	10.0	95
	1928	2,231	826,302	961,416	33,004	31,394	59.2	2,542,682	1,347,713	524	54	9.3	156
Southern Region:													
Atlantic Coast Line	1929	5,153	693,732	698,432	8,897	19,342	59.7	1,064,687	375,632	415	58	12.2	85
	1928	5,116	655,261	659,338	9,538	17,366	61.7	944,476	345,617	433	56	11.5	93
Central of Georgia	1929	1,900	292,341	295,195	5,184	7,272	70.6	378,864	151,463	137	13	8.9	2
	1928	1,898	266,085	267.892	3,889	6,389	69.2	344,396	141,244	145	21	12.9	10
Ill. Cent. (inc. Y. & M. V.)	1929	6,710	1,937,171	1,950,261	30,880	54,002	63.0	3,391,127	1,363,348	737	116	13.6	22
	1928	6,738	1,884,283	1,902.837	30.108	50,521	61.7	3,178,546	1,232,934	759	107	12.4	27
Louisville & Nashville	1929	5,247	1,596,125	1,669,814	56,988	36,305	60.7	2,420,575	1,144,626	588	107	15.4	51
	1928	5,242	1,703,522	1,770,265	58,539	36,177	58.7	2,471,490	1,155,181	618	107	14.7	49
Seaboard Air Line	1929	4,475	531,147	551,023	7,989	13,715	65.2	752,946	290,791	266	41	13.4	6
	1928	4,484	535,257	549,833	6,967	13,895	66.5	744,314	288,445	269	62	18.7	20
Southern	1929	6,679	1,429,345	1,456,076	28,866	36,356	65.0	1,993,941	788,450	829	125	13.1	145
	1928	6,718	1,406,007	1,431,160	28,972	34,348	61.4	1,960,618	755,586	852	100	10.5	112
Northwestern Region:													
Chi. & North Western	1929	8,467	1,383,122	1,438,530	22,024	37,331	63.2	2,224,549	879,167	729	96	11.6	80
	1928	8,463	1,384,539	1,450,146	23,892	36,550	63.4	2,137,702	843,270	757	129	14.6	94
Chi., Milw., St. P. & Pac.	1929	11,244	1,647,913	1,764,204	103,208	51,591	63.1	3,060,708	1,275,060	777	135	14.8	162
	1928	11,247	1,580,165	1,681,467	103,462	48,368	62.9	2,820,010	1,160,329	802	131	14.1	177
Chi., St. P., Minn. & Om.	1929	1,724	290,062	312,255	13,925	6,413	67.5	348,883	142,628	137	27	16.7	19
	1928	1,724	285,986	304,150	13,105	6,081	66.2	329,421	133,009	153	27	14.8	22
Great Northern	1929	8,374	802,260	824,538	53,387	32.945	67.3	2,051,473	1,038,670	457	156	25.5	50
	1928	8,305	785,463	810,537	51,206	29,808	64.8	1,842,185	895,404	507	127	20.1	86
Minn., St. P. & S. St. M.	1929	4,357	444,655	458,861	7,213	13,609	70.2	730,790	333,513	191	45	19.0	14
	1928	4,358	464,812	478,325	4,899	13,142	66.8	706,729	308,676	202	35	14.9	22
Northern Pacific	1929	6,476	821,742	877,546	50,932	27,240	70.4	1,514,103	661,334	428	119	21.7	41
	1928	6,414	779,550	828,962	45,281	25,503	68.8	1,401,811	596,646	416	154	27.0	35
Oreg.-Wash. R. R. & Nav.	1929	2,246	198,592	208,486	14,329	5,818	68.6	334,065	144,249	116	14	10.6	27
	1928	2,246	202,198	212,473	14,178	5,671	66.9	323.875	138,048	122	17	12.2	15
Central Western Region:													
Atch., Top. & S. Fe (incl. P. & S. F.)	1929	10,497	1,615,875	1,759,035	97,728	54,084	64.4	3,231,860	1,186,281	745	155	17.2	156
	1928	10.395	1,399,477	1,509,341	80.311	45,705	67.6	2,595,962	991,342	768	131	14.5	214
Chicago & Alton	1929	1,000	295,059	317,282	2,638	7,503	61.8	451,161	165,248	124	25	16.6	12
	1928	1.000	276,588	299,452	3,036	7,037	61.6	421,283	156,792	123	31	19.9	23
Chi., Burl. & Quincy	1929	9,317	1,340,927	1,414,659	54,607	43,252	64.4	2,478.167	1,108,859	698	152	17.8	53
	1928	9,317	1,335,290	1,374,172	44,992	41,384	64.9	2,336,665	1,035,546	743	159	17.6	87
Chi., Rock I. & Pacific	1929	7,565	1,509.285	1,575,886	15,363	37,801	60.8	2,291,570	880,742	561	121	17.7	28
	1928	7,566	1,374,766	1,437,448	14,324	35,164	61.0	2,058,283	761,818	574	111	16.2	72
Denver & R. G. Wn.	1929	2,564	205,386	233,207	34,321	6,257	72.6	348,952	162,675	223	47	17.3	51
	1928	2,563	195,753	223,094	32,883	5,959	71.4	335,369	158,710	218	52	19.1	39
Oregon Short Line	1929	2,539	269,216	277,193	18,462	8,158	66.9	473,468	200,448	179	10	5.2	71
	1928	2.539	272,621	292,251	29.055	8,277	67.9	474,973	202,127	156	26	14.4	25
So. Pacific—Pacific Lines	1929	8,729	1,730,614	1,887,010	255,009	56,321	63.0	3,467,432	1,212,369	705	175	19.9	71
	1928	8,747	1,676,016	1,815,429	232,906	52.522	61.0	3,264,613	1,112,500	728	184	20.2	54
Union Pacific	1929	3,765	859.909	884,939	44,600	35,811	74.3	1,879,946	745,803	373	56	13.1*	111
	1928	3,714	857,452	879,228	41,695	34,036	69.6	1,854,860	709,003	382	61	13.7	118
Southwestern Region:													
Gulf, Colo. & S. Fe	1929	1,933	225,051	231,315	7,148	7,526	69.2	460,752	216,439	103	20	16.4	22
	1928	1,933	222,093	229,543	6,694	7,004	63.9	428,591	185,764	130	21	14.1	43
Mo.-Kans.-Texas Lines	1929	3,176	423,139	431,987	9,772	14,377	59.9	862,705	330,525	190	51	21.2	81
	1928	3,176	418,466	425,174	13,234	14,036	59.6	837,945	318,518	198	40	16.8	82
Missouri Pacific	1929	7,433	1,345,713	1,398,492	42,949	40,069	64.6	2,376,106	994,429	545	85	13.5	153
	1928	7,433	1,229,984	1,265,471	39,980	35,961	64.1	2,096,605	859,801	532	85	13.8	31
St. Louis-San Francisco	1929	5,213	873,314	890,765	12,717	21,086	61.6	1,264,155	504,717	379	73	16.1	40
	1928	5,029	784,446	797,300	10,468	18,523	61.2	1,106,040	447,550	380	70	15.5	44
Texas & New Orleans	1929	4,709	838,166	843,233	1,756	18,327	60.8	1,136,493	415,715	282	54	16.1	46
	1928	4,708	756.043	761,542	1,689	16,171	68.0	915,262	368,955	267	76	22.1	38
Texas & Pacific	1929	2,015	500,392	500,392	13,802	13,829	63.4	847,094	324,316	189	28	12.9	19
	1928	2,015	564,657	564,657	3,557	14,239	56.4	956,114	355,381	187	17	8.4	16

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

ared with June, 1928, for Roads with Annual Operating Revenues Above $25,000,000

Region, road and year	Average number of freight cars on line: Home	Foreign	Total	Per cent unserviceable	Gross ton-miles per train-hour, excluding locomotives and tenders	Gross tons per train, excluding locomotives and tenders	Net tons per train	Net tons per loaded car	Net ton-miles per car-day	Car miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive miles per locomotive-day
New England Region:													
Boston & Albany.....1929	3,288	5,241	8,529	9.9	18,967	1,314	482	18.8	375	29.4	7,850	157	62.8
1928	2,631	5,037	7,668	4.4	19,755	1,398	509	18.4	407	32.7	7,670	153	61.1
Boston & Maine.....1929	9,862	12,326	22,188	5.1	20,894	1,720	668	19.2	375	27.5	4,039	104	57.7
1928	12,479	10,790	23,269	5.4	17,989	1,562	596	19.2	335	25.2	3,758	115	54.8
N. Y., New H. & Hart..1929	15,469	15,763	31,232	8.3	22,204	1,739	670	20.2	352	26.1	5,232	99	58.0
1928	17,595	16,370	33,965	8.1	20,602	1,572	613	20.5	325	24.1	5,202	108	57.7
Great Lakes Region:													
Delaware & Hudson.....1929	9,458	6,249	15,707	4.2	24,756	1,931	896	27.8	608	35.0	10,922	119	58.4
1928	9,777	5,462	15,239	3.2	23,439	1,878	842	27.1	548	32.6	9,537	132	52.8
Del., Lack. & Western...1929	16,863	7,928	24,791	4.0	25,364	1,982	811	22.6	532	34.9	13,214	120	66.9
1928	18,202	6,814	25,016	4.6	23,340	1,827	762	23.6	522	33.3	13,090	124	68.8
Erie (inc. Chi. & Erie)..1929	29,666	19,848	49,514	4.5	34,638	2,653	1,069	23.7	620	40.9	13,266	103	67.3
1928	31,462	18,273	49,735	4.4	31,836	2,520	1,015	23.7	581	38.9	12,471	111	63.6
Lehigh Valley 1929	20,813	9,211	30,024	9.6	28,290	1,971	855	25.8	502	29.9	11,214	138	58.5
1928	24,217	9,478	33,695	11.4	25,666	1,843	789	25.4	402	24.7	10,074	142	47.4
Michigan Central.....1929	18,262	17,400	35,662	5.2	32,751	2,026	705	19.4	361	30.4	7,071	101	82.2
1928	20,519	15,428	35,947	4.6	31,066	1,974	686	19.7	349	29.5	6,881	103	69.7
New York Central.....1929	69,020	82,876	151,896	4.5	32,975	2,398	1,013	25.3	442	28.2	10,393	96	58.8
1928	72,632	69,918	142,550	5.9	31,548	2,328	972	24.9	443	28.5	9,770	99	55.9
New York, Chi. & St. L..1929	13,284	11,609	24,893	6.3	27,458	1,864	690	20.8	610	46.3	9,116	97	85.4
1928	15,122	9,377	24,499	6.4	26,457	1,868	683	20.4	545	42.9	8,026	101	70.5
Pere Marquette 1929	10,205	9,730	19,935	3.2	20,591	1,552	660	25.2	508	32.1	4,647	95	73.8
1928	11,853	7,554	19,407	4.7	19,115	1,478	615	24.6	419	27.5	3,730	101	62.9
Pitts. & Lake Erie.....1929	11,792	10,004	21,796	6.1	34,529	2,833	1,635	44.4	341	12.0	32,113	98	72.6
1928	15,485	6,927	22,412	4.9	35,368	3,167	1,832	48.0	322	10.7	31,244	90	58.2
Wabash 1929	14,924	12,996	27,920	2.4	28,338	1,736	645	21.0	649	47.8	7,260	108	83.5
1928	16,159	10,975	27,134	3.1	28,519	1,728	633	20.7	590	44.9	6,408	112	72.6
Central Eastern Region:													
Baltimore & Ohio.....1929	71,362	31,770	103,132	6.9	23,629	2,018	945	31.1	608	31.5	11,321	133	70.0
1928	75,605	28,173	103,778	5.7	23,298	1,996	930	31.0	560	29.7	10,506	137	62.7
Central of New Jersey...1929	17,044	10,778	27,822	6.1	23,138	1,918	868	29.9	266	15.1	10,719	139	51.7
1928	18,600	10,108	28,708	3.8	21,270	1,886	865	29.7	254	14.5	10,534	138	49.3
Chicago & Eastern Ill....1929	13,021	4,149	17,170	40.2	25,442	1,644	700	24.4	324	20.0	5,870	116	49.2
1928	13,693	3,671	17,364	31.6	23,184	1,565	660	24.8	294	18.7	5,397	127	46.5
Clev., Cin., Chi. & St. L..1929	21,951	19,903	41,854	5.1	30,677	2,116	942	28.2	559	32.4	9,872	104	60.2
1928	24,925	20,685	45,610	4.1	28,050	2,070	921	28.6	479	27.8	9,220	111	58.1
Elgin, Joliet & Eastern..1929	8,828	8,116	16,944	5.5	16,132	2,161	1,152	40.0	326	12.8	12,179	120	59.7
1928	9,598	6,494	16,092	5.0	16,117	2,122	1,092	38.8	292	11.9	10,190	121	52.1
Long Island 1929	992	4,398	5,390	2.0	5,915	786	301	25.9	92	6.6	1,239	319	55.6
1928	1,664	4,525	6,189	1.6	5,015	772	292	26.0	79	5.7	1,232	290	32.5
Pennsylvania System.....1929	214,086	91,218	305,304	5.3	29,381	2,443	1,136	30.7	510	25.9	14,493	114	59.2
1928	222,689	80,965	303,654	6.5	26,914	2,290	1,044	29.5	452	24.0	12,762	117	51.8
Reading 1929	28,770	14,361	43,131	5.1	21,851	2,018	979	32.6	431	21.5	12,808	137	57.8
1928	31,020	12,062	43,082	5.0	20,809	1,886	913	33.4	419	21.1	12,739	139	58.1
Pocahontas Region:													
Chesapeake & Ohio.....1929	29,280	10,721	40,001	2.6	36,971	2,933	1,584	43.1	1,402	56.8	20,526	78	63.2
1928	32,183	9,156	41,339	2.7	34,737	2,774	1,489	42.9	1,236	50.7	18,763	84	59.9
Norfolk & Western.....1929	28,597	8,899	37,496	1.5	45,559	3,236	1,724	44.2	1,341	51.9	22,548	111	65.6
1928	31,210	7,939	39,149	0.9	42,790	3,077	1,631	42.9	1,148	45.2	20,132	120	57.4
Southern Region:													
Atlantic Coast Line.....1929	19,776	8,703	28,479	6.3	22,738	1,535	541	19.4	440	37.9	2,430	99	49.9
1928	22,630	8,620	31,250	5.2	20,537	1,441	527	19.9	369	30.0	2,252	103	45.6
Central of Georgia.....1929	4,536	5,368	9,904	5.1	19,174	1,296	518	20.8	510	34.7	2,657	128	66.8
1928	4,988	5,183	10,171	3.6	18,335	1,294	531	22.1	463	30.3	2,481	127	54.6
Ill. Cent. (inc. Y.&M.V.)1929	39,963	20,607	60,570	5.2	25,699	1,751	704	25.2	750	47.1	6,772	117	77.4
1928	45,222	19,456	64,678	7.8	23,864	1,687	654	24.4	635	42.2	6,099	124	74.4
Louisville & Nashville...1929	44,775	15,059	59,834	9.6	20,770	1,522	717	31.5	638	33.3	7,272	131	82.8
1928	45,309	15,119	60,428	9.1	19,224	1,451	678	31.9	637	34.0	7,346	132	84.1
Seaboard Air Line.....1929	13,523	7,485	21,008	6.9	19,070	1,418	547	21.2	461	33.4	2,166	123	60.8
1928	14,490	7,194	21,684	7.6	18,242	1,391	539	20.8	443	32.1	2,144	129	56.2
Southern 1929	47,715	16,276	63,991	9.9	20,797	1,395	552	21.7	411	29.2	3,935	145	51.9
1928	48,813	16,041	64,854	8.0	19,276	1,394	537	22.0	388	28.7	3,749	148	51.1
Northwestern Region:													
Chi. & North Western...1929	47,219	27,348	74,567	7.0	20,741	1,608	636	23.5	393	26.4	3,461	118	59.0
1928	48,517	26,634	75,151	6.6	19,967	1,544	609	23.0	374	25.6	3,321	117	55.5
Chi., Mil., St. P. & Pac..1929	49,347	24,348	73,695	3.2	23,951	1,857	774	24.7	577	37.0	3,780	116	68.3
1928	49,757	19,779	69,536	3.3	23,016	1,785	734	24.0	556	36.9	3,439	121	63.7
Chi., St. P., Minn. & Om..1929	2,481	8,773	11,254	7.2	15,670	1,203	492	22.2	422	28.1	2,758	113	66.4
1928	2,559	8,445	11,004	6.8	14,772	1,152	465	21.9	403	27.8	2,572	118	58.8
Great Northern.....1929	40,439	9,994	50,433	6.2	31,790	2,557	1,295	31.5	687	32.3	4,135	106	47.8
1928	40,890	8,634	49,524	6.5	28,715	2,345	1,140	30.0	603	31.0	3,594	114	45.3
Minn., St. P. & S. St. M..1929	19,417	5,708	25,125	4.5	20,124	1,643	750	24.5	450	26.2	2,552	91	65.8
1928	19,904	5,217	25,121	5.2	17,672	1,520	664	23.5	413	26.3	2,361	96	68.0
Northern Pacific.....1929	37,400	6,588	43,988	8.9	24,795	1,843	805	24.3	501	29.3	3,404	136	56.7
1928	37,600	6,517	44,117	8.6	24,126	1,798	765	23.4	451	28.0	3,101	138	51.2
Ore.-Wash. R.R. & Nav..1929	7,673	4,260	11,933	7.2	22,909	1,682	726	24.8	403	23.7	2,141	154	57.0
1928	8,229	3,640	11,869	8.2	20,273	1,602	683	24.3	388	23.8	2,049	169	54.5
Central Western Region:													
Atch., Top. & S. Fe (incl. 1929	59,750	20,099	79,849	5.7	30,671	2,000	734	21.9	495	35.0	3,767	104	68.8
P. & S. F.).....1928	64,425	18,121	82,546	5.0	27,386	1,855	708	21.7	400	27.3	3,179	109	58.9
Chicago & Alton.....1929	10,362	4,355	14,717	5.8	24,584	1,529	560	22.0	374	27.5	5,510	121	71.8
1928	10,794	4,212	15,006	3.7	22,165	1,523	567	22.3	348	25.4	5,228	128	65.5
Chi., Burl. & Quincy....1929	44,234	20,052	64,286	6.2	25,017	1,848	827	25.6	575	34.8	3,967	117	57.7
1928	48,914	17,914	66,828	6.1	23,340	1,750	776	25.0	517	31.8	3,705	119	52.5
Chi., Rock I. & Pacific..1929	30,193	23,971	54,164	5.2	20,870	1,518	584	23.3	542	38.3	3,881	128	77.8
1928	32,824	17,899	50,723	7.0	20,071	1,497	554	21.7	501	37.9	3,356	130	70.6
Denver & R. G. Wn.....1929	11,625	2,918	14,543	2.8	20,124	1,699	792	26.0	373	19.8	2,115	163	33.1
1928	12,195	2,719	14,914	3.3	19,303	1,713	811	26.6	355	18.6	2,064	175	31.6
Oregon Short Line.....1929	6,592	3,653	10,245	6.9	25,843	1,759	745	24.6	652	39.7	2,632	108	52.3
1928	7,400	3,425	10,825	4.6	24,339	1,742	741	24.4	622	37.6	2,653	110	58.7
So. Pacific—Pacific Lines.1929	37,172	31,637	68,809	5.1	27,105	2,004	701	21.5	587	43.3	4,630	113	81.1
1928	37,217	29,844	67,061	5.4	25,469	1,948	664	21.2	553	42.8	4,240	115	74.8
Union Pacific.....1929	22,877	8,412	31,289	9.5	39,023	2,186	867	20.8	795	51.4	6,602	101	72.2
1928	23,362	8,118	31,480	10.1	37,328	2,163	827	20.8	751	51.8	6,364	102	69.4
Southwestern Region:													
Gulf, Colo. & S. Fe.....1929	10,948	4,206	15,154	4.1	29,093	2,047	962	28.8	476	23.9	3,732	89	64.4
1928	9,261	4,232	13,493	3.1	28,042	1,930	836	26.5	459	27.1	3,203	96	52.2
Mo.-Kans.-Texas Lines...1929	16,304	6,892	23,196	6.8	29,028	2,039	781	23.0	475	34.5	3,469	89	61.2
1928	17,253	6,426	23,679	6.7	28,464	2,002	761	22.7	448	33.2	3,343	88	61.5
Missouri Pacific.....1929	29,635	24,472	54,107	5.4	24,837	1,766	739	24.8	613	38.2	4,459	118	76.3
1928	31,229	19,182	50,411	6.3	24,071	1,705	699	23.9	569	37.1	3,856	118	70.5
St. Louis-San Francisco..1929	24,299	9,810	34,109	3.5	19,941	1,448	578	23.9	493	33.5	3,228	137	66.7
1928	24,144	8,734	32,878	3.4	19,230	1,410	571	24.2	454	30.7	2,966	141	59.8
Texas & New Orleans...1929	11,197	15,443	26,640	4.4	20,603	1,356	496	22.7	520	37.7	2,943	90	83.9
1928	12,145	13,695	25,840	5.6	18,519	1,211	488	22.8	476	30.7	2,612	100	74.3
Texas & Pacific.....1929	5,362	8,418	13,780	4.7	23,797	1,693	648	23.5	785	52.8	5,365	86	79.2
1928	6,941	9,416	16,357	5.0	23,364	1,693	629	25.0	724	51.5	5,879	97	92.7

Foreign Railways

New Rail Motor Cars For Danish Railways

Rail motor car operations are being extended on the Danish railways according to recent reports to the United States Department of Commerce. During the last half of 1928 a number of different types of rail motor cars were ordered. To this has been added a recent order for 12 new rail motor cars with an aggregate value of 1,500,000 crowns (about $390,000). These cars, which are to be delivered before April, 1930, are to be equipped with two electrically driven motors, and will each have a seating capacity of 72 persons.

State Railways of New Zealand Issue Bulletin

An attractive illustrated bulletin has been issued for 1929 by the State Railways of New Zealand. It outlines the progress the lines have made in the past years during which more than 3,000 route miles of railway have been built in the Commonwealth. The booklet also is descriptive of the products of the various districts served by the lines and also of the country's principal scenic, health and sporting resorts. The publication contains 32 pages and includes also a colored map of the territory served by the railway.

Freight Trains Speeded Up in Great Britain

Railways in Britain have recently increased the speed of freight services from West England, Wales, and Scotland to London, according to the United States Department of Commerce reports. These express freight trains, composed of vacuum-braked rolling stock and powerful locomotives, have been placed in night service between principal industrial centers, traveling at high speeds with nonstop intervals in some cases of 140 miles. The policy of quick transit insuring next-day delivery is being extended continually.

On one system, 70 express freight trains are run every night to and from the west of England, South Wales, West Midlands and the north of England. On another system a general speeding up, amounting to about 30 to 40 minutes per train, has been achieved. Freight collected in the afternoon or early evening in Glasgow and other towns in Scotland, is delivered in London early the following morning, and similar delivery is made between other points. Time-tables indicating the latest hours at which consignments for these fast trains can be accepted at the sending station, and when they will be normally available for delivery at their destination, are furnished to shippers in various areas.

Traffic

Friday morning, August 16, witnessed the departure from Columbia University, New York City, of 13,809 students who, on that day, ended their attendance at the summer school of the University. A special ticket office was set up on the grounds of the University and a "fleet of trucks" took trunks of the passengers to the railroad stations.

Parcels are now taken from New York to Boston or from Boston to New York in four hours; price five dollars. This service is advertised by the Western Union Telegraph Company and the time is counted from the door of the shipper to the door of the consignee. Parcels are sent, twice a day by Colonial Airways. The limit of weight is five pounds. It is said that Colonial Airways has terminated its contract with the Express Agency.

The Chicago & Alton and the Chicago, Burlington & Quincy have changed the name of their jointly operated Mid-Day Limited, which runs between St. Louis, Mo. and Kansas City, to the "St. Louis Robin" in honor of the plane in which Dale Jackson and Forest O'Brine established the world's endurance flight record. The train leaves St. Louis at 1:45 p. m. instead of 12:10 p. m. and arrives in Kansas City at 9:00 p. m. instead of 7:40 p. m. Returning, it leaves Kansas City at 9:00 a. m. instead of 12:10 p. m. and arrives in St. Louis at 4:20 p. m. instead of 7:40 p. m.

An embargo against wheat at Galveston, Texas was supplemented by a permit system on August 21. Under this system wheat may move to Galveston for export subject to the regulations involved in the issuance of permits. The result of the embargo has been a gradual reduction of excessive wheat accumulations and an orderly movement of traffic. Complete freedom from restrictions will be granted when accumulations have been reduced to normal proportions and there are current outlets sufficient to take care of incoming grain shipments.

Air and Rail Fare Reduced

The New York Central and the Universal Air Express announce that the fare between New York and the Pacific Coast by their line, including lower berth on trains and meals on the air portion of the route, has been reduced, about ten dollars, to $223.51, a reduction which, it is said, has been made possible by the large increase in travel since the opening of the route in June. Corresponding reductions have been made between other cities. By this route, passengers leave New York City by the Southwestern Limited at 5 p. m.; leave Cleveland the next morning, by Fokker planes, via Chicago and Kansas City to Garden City, Kan., whence they take the California Limited over the Atchison, Topeka & Santa Fe to Los Angeles.

Northwest Carriers Place Embargo on Grain

A nine day embargo effective from August 23 to August 31 on shipments of barley, oats and rye to Minneapolis, Minn. St. Paul, Duluth and Superior, Wisc., was decided upon by northwestern carriers on August 21. A lack of storage facilities and the accumulation of railway cars in the terminal yards were the principal reasons assigned for the embargo. More than 28,000,000 bu. are in storage in warehouses which have a capacity for 35,000,000. The action follows an appeal made by the joint grain transportation committee of the northwest shippers advisory board after a meeting at Minneapolis on August 9 asking shippers of grain throughout the northwest to fill their country elevators before making heavy shipments to the terminal markets of Minneapolis, Duluth and Superior in order to ward off the possibility of congestion at terminal elevators.

The unconsumed surplus of grain from the 1928 harvests of the northwest was one of the largest in history, and a huge quantity of this old grain is still stored in terminal elevators; and the southwest winter wheat belt, whose own terminal houses are filled nearly to capacity, has been shipping, for the past two or three weeks, a heavy volume of grain for storage in Minneapolis and the Twin Ports. The northwest terminal elevators are filled to at least two-thirds of their aggregate working capacity. In Minneapolis, where elevators have a total working capacity of 45,645,491 bushels, stock on hand August 3 amounted to 31,607,209 bushels. In Duluth-Superior, 22,491,810 bushels were stored August 5 in houses with a combined working capacity of 35,717,641 bushels.

The joint grain transportation comittee says:

"While the present export demand is not as strong as usual, it is expected that it will be increased materially within a few weeks and members of the committee are agreed that close co-operation among the grain marketing and transportation agencies will go far toward removing any possibility of transportation delays."

Record Freight Movement, Half Year

The volume of freight moved by the Class I railroads in the first six months this year was the greatest ever reported. Reports gathered by the Bureau of Railway Economics show a total of 238,638,592,000 net ton miles, an increase of 4,634,565,000 net ton miles or two per cent over the previous high record for any corresponding period, established in the first half of 1927; and an increase of 6.6 per cent above the first half of 1928.

The Eastern district shows an increase of 8.9 per cent, compared with 1928; the Southern District an increase of 1.6 per cent, and the Western an increase of 5.3 per cent.

The total for June was 40,724,921,000 net ton miles, an increase of 3,418,166,000 net ton miles or 9.2 per cent over the same month last year.

In the Eastern District for June there was an increase of 9.4 per cent in the Southern 5.4 per cent and in the western 10.1 per cent.

The average speed of freight trains in June was 13.4 miles an hour, the highest average ever reached in any month and an increase of 0.3 mile above June of last year.

The daily average movement per freight car in June was 32.4 miles, the highest June record, and 2.1 miles greater than that for June, 1928, and 2.4 miles greater than that for June 1927.

The average load per car in June was 26.7 tons, an increase of 0.4 ton above June, 1928.

Industrial Traffic Men Organize at Chicago

An industrial traffic division has been organized by the Chicago Association of Commerce to meet the need of collective action on matters of transportation as they relate to the commercial and shipping interests. The division is composed of traffic representatives of manufacturers, wholesalers, shippers and receivers located within the Chicago metropolitan district. With a view of co-ordinating such interests and providing a means of contact with others interested in rates, regulations and practices of common carriers, it is proposed to set up 23 committees, to represent as many commodities.

In addition to these commodity committees, the following standing committees of the Chicago Shippers' Conference Association will be continued as standing committees of the industrial traffic division: air transportation, car service, demurrage, storage and warehouse, claims, export and import, express, highway transportation, legislative, rates, tariffs and classification, reconsigning, diversion and transit privileges, service, merchandise schedules and trap cars, switching and industrial, water transportation, weighing and inspection.

An executive committee of the industrial traffic division will be created with a view to giving the widest possible representation to the Chicago metropolitan district as a whole. All receivers and shippers, regardless of their present affiliations, will be entitled to attend meetings, receive advices and participate in the consideration of matters coming before the industrial traffic division. As matters requiring definite action are presented for consideration, all members of the industrial traffic division interested in the rates, rules, regulations and practices directly involved will be consulted.

Equipment and Supplies

Locomotives

THE CONDON, KINZUA & SOUTHERN is inquiring for one 2-10-2 type locomotive.

THE NATCHEZ, COLUMBIA & MOBILE is inquiring for one or two locomotives of the 2-8-2 type.

Freight Cars

THE GREAT WESTERN ordered two caboose cars from the Mt. Vernon Car Manufacturing Company. Through a typographical error the order was reported in the *Railway Age* of August 17 as having been placed by the Chicago Great Western.

Passenger Cars

THE CANADIAN NATIONAL has ordered one gasoline combination passenger and baggage rail motor car from the J. G. Brill Company.

THE BOARD OF TRANSPORTATION, City of New York, on August 20 received bids for 300 steel passenger cars for subway service. The American Car & Foundry Company was the lowest bidder and the Standard Steel Car Company the next lowest bidder. Inquiry for this equipment was reported in the *Railway Age* of July 13.

THE DELAWARE, LACKAWANNA & WESTERN has ordered from the Pullman Car & Manufacturing Corporation 141 all-steel electric vestibuled motor cars, equipped with roller bearings. The 230-hp. motors and the necessary control equipment for each of these cars will be furnished by the General Electric Company. A contract for the conversion of 141 cars of the latest model of the present suburban coaches to vestibuled trailer cars has been given to the American Car & Foundry Company. This equipment is for use on commuter trains operating between Hoboken, N. J., Montclair, Gladstone and Dover, comprising 70 miles of route, the electrification of which is now under way. Each motor car will be 71 ft. long and weigh 148,000 lb. complete with electrical equipment, and each trailer will weigh 113,000 lb. Each motor car will seat 84 passengers and the trailers 78 or 82 passengers. Inquiry for this equipment was reported in the *Railway Age* of June 22.

Iron and Steel

THE BALTIMORE & OHIO has ordered 100 tons of steel from the American Bridge Company for a bridge in Maryland.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 450 tons of structural steel for a viaduct at Kansas City, Mo., from the Kansas City Structural Steel Company.

THE PENNSYLVANIA has ordered 200 tons of steel from the Bethlehem Steel Company for a bridge at Newport, Del.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS has ordered 1,000 tons of structural steel for miscellaneous bridge work from the American Bridge Co.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has ordered 1,900 tons of structural steel for car shops at Milwaukee, Wis., from the Worden-Allen Company.

Signaling

THE WABASH has ordered from the Union Switch & Signal Company materials for the installation of automatic block signals on its line between Tilton, Ill., and Montpelier, Ohio, 75 miles, single track. Colorlight signals will be used.

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company materials for a dispatcher control system to be installed on its line between Lima, Ohio, and Lafayette, 8 miles, double track. The control machine will be at Lafayette.

THE INTERBOROUGH RAPID TRANSIT COMPANY, New York City, has ordered from the Union Switch & Signal Company color-light signals, automatic train stops and other apparatus for use in the relocation of signals on the Queensborough Bridge.

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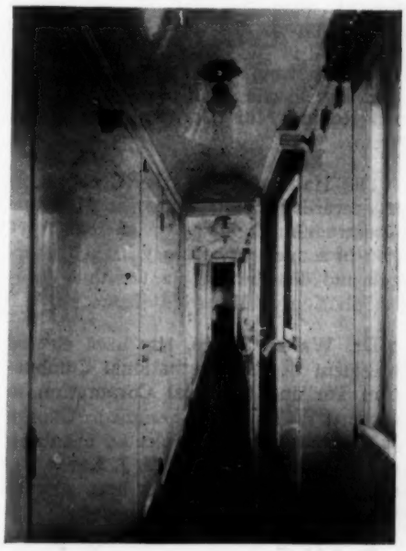


Interior View of Private Car of Princess Ileana of Roumania

Supply Trade

The Ingersoll-Rand Company has moved its Chicago office to the Daily News building, 400 W. Madison street.

Beverly L. Sneed, contracting manager of the **Virginia Bridge and Iron Company** has been elected vice-president to succeed **G. A. Tretter,** retired.

F. C. Hosimer, has been appointed representative of the **Wagner Electric Corporation** with headquarters at Chicago.

W. M. Wilson, Chicago agent of the **Flannery Bolt Company,** Pittsburgh, Pa., has moved his office from the Railway Exchange to Willoughby Tower, 8 South Michigan avenue, Chicago.

Robert B. Marshall has been appointed representative of the **Chain Belt Company,** Milwaukee, Wis., with headquarters at New York City.

The **Orton Crane and Shovel Company,** Chicago, has appointed **Thomas D. Crowley and Company,** Chicago, its special railway sales representative in the United States.

H. W. Barhyte after 11 years service, has resigned from the **Southern Wheel Company,** New York, to take a position as eastern representative for the **Standard Auto-Tite Joints Company,** Pittsburgh, Pa.

Carter Blatchford, Railway Exchange building, Chicago, has been appointed Chicago representative of the Martin circulator, a device manufactured by the **Locomotive Boiler Economizer Company,** Los Angeles, Cal.

Charles M. Easterly who resigned as district sales manager of the Inland Steel Company in April, 1928, to become president of the Capital City Culvert Company has been elected first vice-president in charge of sales of the **Canton Rolling Mills Corporation,** Canton, Ohio.

The **Harnischfeger Sales Corporation** has awarded a contract to the Memphis Construction Company for the construction of a one-story factory branch, storage and distributing plant with a service division at Memphis, Tenn.

Dr. Walter Runge, has been elected president of the **International Combustion Tar and Chemical Corporation** to succeed **W. H. Lewis,** resigned. **George E. Learnard** has been elected chairman of the board to succeed **F. J. Lewis,** resigned. **Grant Thorn** has been elected vice-president in charge of sales.

Fred M. Cross, manager of the **Ingersoll-Rand Company,** pneumatic tool sales department, for the Chicago office, has been promoted to assistant general manager of pneumatic tool sales with headquarters at the New York office 11 Broadway. **D. W. Zimmerman** succeeds Mr. Cross as manager of pneumatic tool sales for the Chicago office.

E. J. Schwanhausser, for the past two years assistant manager of the Harrison works of the **Worthington Pump & Machinery Corporation,** has been appointed manager of the Buffalo works. He entered the employ of the Worthington Pump & Machinery Corporation while he was a student at Stevens Institute of Technology serving during the summers of 1912, 1913 and 1914 in the various shops and on the testing floors at Harrison. Following his graduation in 1915 he was appointed test and erection engineer. He subsequently served in 1917 in the condenser engineering department, in 1919 as machine shop equipment engineer and in 1920 was promoted to superintendent of the machine shops. Three years later he was appointed superintendent of the field erection department. He became engineering assistant to the manager in 1926, was made assistant to the manager the following year and a few months later was appointed assistant works manager.

Obituary

John D. Hurley, president of the Independent Pneumatic Tool Company died at Chicago on August 15 following a sudden heart attack.

Horace Steadman Clark, Pacific manager of the Westinghouse Air Brake Company, San Francisco, Cal., also a director and vice-president of the Westinghouse Pacific Coast Brake Company, Emeryville, Cal., died on August 16 at Berkeley, Cal., at the age of 57.

Howard Stanley Folker, for over ten years chief engineer of the National Safety Appliance Company, San Francisco, Cal., died on August 11. Mr. Folker was born at Suresne, France, in 1888. He received his early training first as fireman and then engineman and air-brake man on the Mt. Tamalpais Railroad (now the Mt. Tamalpais & Muir Woods Railway). At the time of his death he had been in the service of the National Safety Appliance Company for 18 years, and he was the inventor of the company's system of automatic train control. Mr. Folker took out more than 100 patents in train control and other devices; he also carried out a great deal of original research work in the matter of handling and controlling permanent magnets of more than ordinary size.

Luther B. McMillan, who died on August 10, was for 13 years general consulting engineer of the Johns-Manville Corporation. Mr. McMillan was born at Bem, Mo., on September 21, 1891. He was graduated from the Texas Agricultural and Mechanical College in 1911 with the degree of bachelor of science in mechanical engineering. He later took graduate work in mechanical engineering and chemical engineering at this institution and was instructor in mechanical engineering in 1912 and 1913. He received the degree of mechanical engineer in 1912 and of chemical engineer in 1913 and was awarded a fellowship in engineering at the College of Engineers of the University of Wisconsin for 1913-1914 and received the degree of master of science in 1914. After serving two years as instructor in steam and gas engineering at this institution and specializing in research pertaining to the science of heat transmission, with particular attention of heat transfer through insulation, he became general consulting engineer for the Johns-Manville Corporation. Mr. McMillan was a member of the American Society of Mechanical Engineers, American Society of Heating & Ventilating Engineers, the American Society of Refrigerating Engineers and the Society of American Military Engineers. He was a member of the Council of the American Society of Mechanical Engineers at the time of his death. In 1916 he received the junior award of the American Society of Mechanical Engineers for a paper entitled the Heat Insulating Properties of Commercial Steam Pipe Covering; many papers were presented by him before this and other societies. He also contributed many articles on various phases of insulation to the technical press and prepared technical data for Kent's and Marks' Handbooks, the American Society of Heating & Ventilating Engineers' Guide, the Handbook of the National District Heating Association and similar publications. He was identified with the National Research Council having served from 1924 to 1928 on the sub-committee on heat transfer and in 1928, when the Division of Engineering and Industrial Research authorized the organization of the committee on heat transmission he was elected a member of the executive committee and also appointed chairman of the sub-committees on thermal insulation. His services for the Johns-Manville Corporation constituted a record of marked achievement in the insulation field and he had to his credit the development of many important insulating materials and improvements in their manufacture and application. The thermal insulation testing laboratory of the corporation at its Manville factory was established under Mr. McMillan's direction. His research work in connection with this laboratory has resulted in the improvement as well as the standardization of many important insulating products.

Construction

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—A contract has been awarded to Loomis Brothers, Cedar Rapids, Ia., for the construction of an addition to the railroad's passenger station at Marion, Ia. This two-story 27-ft. x 86-ft. brick and concrete addition will contain office, express and baggage rooms.

COLORADO & SOUTHERN.—A contract has been awarded to the Roberts & Schaefer Company, Chicago, for an "N. & W." type electric cinder plant to be built at Fort Collins, Colo.

DELAWARE & HUDSON.—This company has awarded a contract to W. S. Rae, Pittsburgh, Pa., for the construction of an underpass to eliminate a grade crossing on its lines in Round Lake, N. Y., at an approximate cost of $84,000.

DELAWARE, LACKAWANNA & WESTERN.—This company has awarded a contract to H. F. Curtis, New York, for work to cost $131,383 in connection with the elimination of the East Water street grade crossing in Elmira, N. Y. Work on the project will start immediately.

ELIZABETH SOUTHERN.—This company has replied to a questionnaire of the Interstate Commerce Commission, stating that it is controlled by the Industrial Lumber Company, of Elizabeth, La., and that it wishes to construct a 30.5-mile line from that city to a connection with the Missouri Pacific at Kinder, La.

ERIE.—This company is receiving bids until about September 1, for the construction of an overhead bridge for the elimination of a highway grade crossing on its lines in Hamburg, N. Y.

ERIE.—A contract has been awarded to the Roberts & Schaefer Company, Chicago, for the furnishing and erection of an "N. & W." type direct locomotive coaler and large sand storage and drying plant at Corning, N. Y.

ERIE.—This company has submitted to the New York Public Service Commission a new plan for carrying West Main street, Olean, N. Y., over the company's twelve tracks at that point. The new plan, which calls for a six per cent grade on the westerly approach to the bridge structure, is favored by the city of Olean and the State Department of Public Works. The estimated cost of the project is about $124,000, of which 50 per cent is to be paid by the railway and 25 per cent each by the city and state.

GREAT NORTHERN.—This company and the Western Pacific have applied to the Interstate Commerce Commission for authority to acquire and construct a 36-mile line from Lookout, Modoc county, Calif., to a connection with the McCloud River Railroad at Hambone, Siskiyou county, Calif.

ILLINOIS CENTRAL.—A contract for the construction of a one-story brick and concrete passenger station at Monroe, La., has been let to W. C. Salley, Monroe. This project will cost about $100,000, and the building will have outside dimensions of 28 ft. by 123 ft. while a brick platform will be 500 ft. long and 15 ft. wide.

MAYO & COOK'S HAMMOCK.—A contract has been awarded to E. W. Parker, Tampa, Fla., for the construction of this company's new line in northern Florida between Mayo and Cook's Hammock, a distance of about 15 miles, at a cost of approximately $200,000.

MISSOURI PACIFIC.—A contract has been awarded to the Roberts & Schaefer Company, Chicago, for the construction of a reinforced concrete shallow pit automatic electric locomotive coaling plant and an "N. & W." type electric cinder plant to be built immediately at Durand, Kan.

NEW YORK CENTRAL.—This company is receiving bids until about August 28, for the construction of a new commissary building at 161st street and Morris avenue, New York City. The building will be two stories high and this section will be so constructed that eight additional floors can be added later if necessary. The cost of the present contract has been estimated at $250,000. Babor-Comeau & Company, Inc., New York, has been awarded a contract for the construction of the foundation for the building and this part of the work is nearly completed.

NEW YORK, NEW HAVEN & HARTFORD.—This company has received permission from the New York Public Service Commission to construct and operate a switch track at grade and sidetrack across Van Wagner's road in Poughkeepsie, N. Y., to serve the Poughkeepsie Brick Corporation's plant. Two tracks will be constructed to serve both sides of the factory. The consent is given by the commission with the provision that every movement of any locomotive or car on the switch and sidetrack shall be protected by an employee who shall warn travelers on the highway and each locomotive or car shall be brought to a stop before crossing the road.

NORTHERN PACIFIC.—A contract for the construction of a double-track cut-off around the yard at Laurel, Mont., has been let to E. J. Dunnigan, St. Paul, Minn., at a cost of $175,000. The same contractor has been awarded a contract for the reconstruction and lengthening of a bridge near Allard, Mont., at a cost of about $65,000. A contract has been let to Carl Steen, Grand Forks, N. D., for the construction of a brick passenger station and restaurant building at Mandon, N. D., at a cost of $150,000.

OAXACA TO PACIFIC.—This company has been formed to construct a railroad between Ejutla, Oax., and Puerto Angel on the Pacific ocean, about 80 miles. The line would connect with the National of Mexico at Ejutla, and would be extended from that point southeast to Miahuatlan and from that point south to Puerto Angel.

PENNSYLVANIA.—A contract has been awarded to the Roberts & Schaefer Company, Chicago, for the furnishing and erection of an "N. & W." type electric cinder handling plant at Canandaigua, N. Y.

SOUTHERN.—Plans have been completed for the construction of a grade separation structure at Louisville, Ky., to carry the tracks of this company over Third and K streets.

TURLOCK & EASTERN.—Examiner M. S. Jameson has recommended to the Interstate Commerce Commission that the application of this company for authority to construct a line from Turlock, Calif., to Cortez, 5 miles, be denied.

WABASH.—A contract has been awarded to the Roberts & Schaefer Company, Chicago, for the furnishing and erection of an "N. & W." type multiple track electric cinder plant for locomotives at Landers, Ill.

WESTERN PACIFIC.—The Western Pacific California, subsidiary corporation organized July 10, 1928, applied to the Interstate Commerce Commission for a certificate of convenience and necessity to authorize the construction of a line about 25 miles long from Quint street, in San Francisco, southeasterly and easterly around the shore of San Francisco Bay to Redwood City and beyond. The Interstate Commerce Commission has considered the company's application, and it has now made public the report of Examiner O. D. Weed, proposing that the Commission shall decide that the application has not been sustained; that public convenience and necessity are not shown to require such a railroad. The proposed line is substantially parallel to one of the Southern Pacific all the way, and the Southern Pacific protested that its own line afforded all necessary facilities. An extension of this line eastward or northward, 16 miles, would connect it with the main line of the Western Pacific, but the application makes no mention of the value to the parent company of such a connection and the commission, therefore, does not take into consideration.

YATES & WEST TEXAS.—Examiner M. S. Jameson has recommended to the Interstate Commerce Commission that the application of this company for authority to build a line from a connection with the Kansas City, Mexico & Orient near Rankin, Tex., south and southeastward to Sheffield, 43 miles, be approved.

YREKA.—This company has applied to the Interstate Commerce Commission for authority to construct an extension of its line from Yreka City, Calif., to Etna, 35.2 miles.

Railway Finance

BALTIMORE & OHIO.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon one-half mile of its Robinson Run branch in Harrison county, West Virginia.

CENTRAL VERMONT.—*Directors.*—Directors and officers of the Central Vermont Railway, Inc., recently formed company that is to acquire and operate the property of the Central Vermont Railway Co., now in receivership and recently sold at public auction for $27,000,000, were elected in St. Albans, Vt., on Aug. 15.

Included on the board of directors are John G. Sargent, former attorney-general of the United States, and Gerard Ruel, K. C., vice-president in charge of legal affairs of the Canadian National. The complete membership includes also:

Sir Henry W. Thornton, K. B. E., president and chairman, Canadian National; Judge J. W. Redmond, one of the receivers of the Central Vermont Railway Co.; Fred A. Howland, president, National Life Insurance Co.; H. A. Way, manufacturer and banker, Burlington, Vt.; H. J. M. Jones, Barre, Vt., manufacturer; Ex-Governor E. C. Smith of St. Albans, banker; S. J. Hungerford, vice-president in charge of operation, C. N. R.; R. A. C. Henry, director, bureau of economics, C. N. R.

CHICAGO & NORTH WESTERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon 5.4 miles of line between Clowry and Michigamme, Mich.

CHICAGO & NORTH WESTERN.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to call upon its trustee to authenticate and deliver to it $9,084,000 and to issue and sell them for the purpose of meeting a like maturity of sinking fund bonds of 1897 due October 1. It is proposed that the new issue shall bear interest at 4½ per cent and mature in 1987 (to be dated 1897) and that the issue be sold at the best price obtainable.

CINCINNATI UNION TERMINAL.—*Securities.*—This company has been authorized by the Interstate Commerce Commission to issue $3,000,000 of 5 per cent cumulative preferred stock, and $5,250,000 of short term notes, the stock to be sold to the Cincinnati Railroad Terminal Development Company at par. The notes will bear interest at 6 per cent and are to be sold at not less than face amount.

CINCINNATI, HAMILTON & DAYTON.—*Acquisition and Securities.*—The Interstate Commerce Commission has dismissed the application of this company for authority to acquire the electric railway properties of the Indiana, Columbus & Eastern, 143.6 miles, and the Lima-Toledo Railroad, 70.8 miles, and to issue securities in connection therewith—the commission holding that the lines in question are not under its jurisdiction as regards the authority sought.

DETROIT & MACKINAC.—*Abandonment Recommended.*—In a supplemental report by Examiner Thomas F. Sullivan of the Interstate Commerce Commission on a further hearing in re this company's application for authority to abandon its Rose City branch from Emery Junction (now known as National City), Mich., to Rose City, 31.2 miles, and the branch extending from Smith Junction, Mich., to South Branch, one mile, it is recommended that abandonment of these lines be permitted.

GEORGIA & FLORIDA. —*Bonds.*—The Interstate Commerce Commission has authorized the Statesboro Northern to extend for five years the maturity date of $120,000 of first mortgage 6 per cent bonds which matured on June 1. The bonds are owned by the Georgia & Florida, lessee.

GEORGIA & FLORIDA.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $26,344 of short-term notes and to issue conditionally $1,100,000 of first mortgage, 6 per cent bonds, series A, by assignment of its interest therein, as collateral security for a short-term note.

NEW ORLEANS, NATALBANY & NATCHEZ. —*Operation.*—The Interstate Commerce Commission has authorized this company to operate over a line owned by the Natalbany Lumber Company from a connection with its line at Woodhaven, La., to a connection with the Yazoo & Mississippi Valley at Bodley, 3.6 miles.

OKLAHOMA-SOUTHWESTERN. — *Operation Suspended.*—The Oklahoma Corporation Commission has granted this company permission to abandon operation and take up its rails between Bristow, Okla., and Nuyaka, 24 miles. Besides its main line the company owns 5.33 miles of branch line and 5.69 miles of sidings. Its equipment consists of two locomotives, three passenger cars, and 20 freight cars.

SEABOARD AIR LINE.—*Adjustment Bonds.*—The company and the Adjustment Bondholders' Committee have announced that $19,924,000 of the adjustment bonds of the company have been deposited with the trustee under the refinancing plan and that this is approximately 79 per cent of these bonds, but that there should be further substantial deposits of these bonds if the plan is to be consummated. Accordingly, the final date when these bonds may be deposited has been extended to September 6.

YREKA.—*Stock.*—This company has applied to the Interstate Commerce Commission for authority to increase its capital stock from $100,000 to $750,000—par value $25. It is proposed to distribute 26,000 of the new shares pro rata with their present holdings among present stockholders, without cash consideration and to offer the remaining 5,083.5 shares to the public at $25 per share.

Dividends Declared

Chestnut Hill.—$.75, quarterly, payable September 4 to holders of record August 21.

Delaware & Bound Brook.—2 per cent, quarterly, payable August 20 to holders of record August 14.

Gulf, Mobile & Northern.—Preferred, $1.50, quarterly, payable October 1 to holders of record September 16.

Louisville, Henderson & St. Louis.—Common, 4 per cent, payable August 15 to holders of record August 1.

Missouri Pacific.—Preferred, $1.25, quarterly, payable October 1 to holders of record September 6.

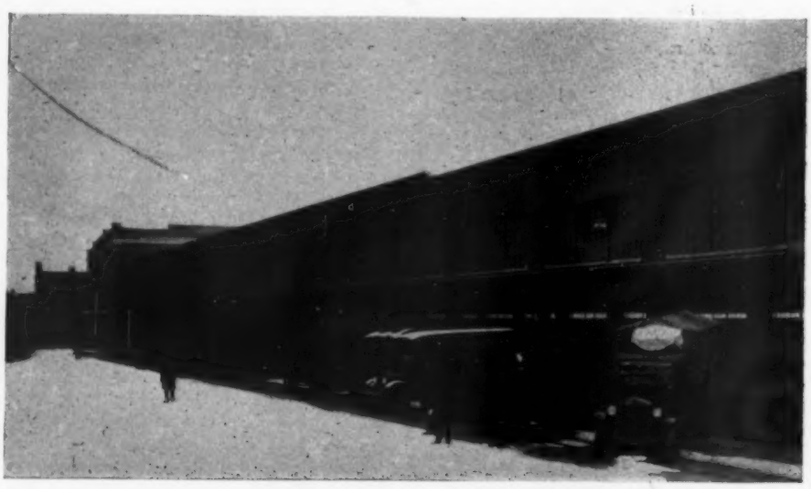
North Pennsylvania.—$1, quarterly, payable August 26 to holders of record August 19.

Philadelphia, Germantown & Norristown.—$1.50, quarterly, payable September 4 to holders of record August 21.

Average Prices of Stocks and of Bonds

	Aug. 20	Last week	Last year
Average price of 20 representative railway stocks.	158.46	153.52	120.93
Average price of 20 representative railway bonds..	89.86	90.11	92.33

* * *



Wabash Fruit Auction House at St. Louis, Mo.

Railway Officers

Executive

H. A. Mitchell, vice-president of the Sacramento Northern, has been elected president, with headquarters as before at San Francisco, Cal., succeeding **H. M. Adams,** who is also president of the Western Pacific.

Robert Rice, vice-president of the Colorado & Southern, with headquarters at Denver, Colo., has also been elected president of the Denver Union Terminal. **J. S. Pyeatt,** president of the Denver & Rio Grande Western, has also been elected vice-president.

The following officers have been elected by the Central Vermont Railway, Inc., organized to take over the Central Vermont Railway: president, **Sir Henry W. Thornton;** vice-president, **George A. Gaston;** general counsel, **John W. Redmond;** comptroller, **E. Deschenes;** clerk and treasurer, **J. B. Wood.**

Operating

W. H. Ruthven, assistant superintendent on the British Columbia district of the Canadian Pacific, with headquarters at Revelstoke, B. C., has been promoted to superintendent of the Lethbridge division of the Alberta district, with headquarters at Lethbridge, Alta.

Adlai M. Stevenson, who has been appointed superintendent of the Owensboro division of the Louisville & Nashville, with headquarters at Owensboro, Ky., was born on January 19, 1881, at Bennettstown, Ky. He was educated in the public schools and entered rail-

Adlai M. Stevenson

way service on March 3, 1903, with the Louisville & Nashville as agent at Gracey, Ky., which position he held until May, 1904. From that date until May, 1906, he served as operator at various points on the Memphis line, and from May 1906, until November, 1918, was ticket agent at Russellville, Ky. At that time Mr. Stevenson became chief clerk in the master of trains office on the Eastern Kentucky division, which position he held until November, 1919, when he became train dispatcher. He served in this position until April, 1920, and was then transferred to Louisville as traveling auditor. In September, 1921 he was transferred to the general manager's office where he remained until until July, 1922. Mr. Stevenson then returned to the Owensboro and Nashville division as master of trains. In February, 1923, he returned to Louisville as inspector of transportation, remaining in that position until May, 1929, when he was appointed assistant superintendent at Pensacola, Fla., which position he was holding at the time of his recent appointment.

Engineering, Maintenance of Way and Signaling

J. C. Bousfield, at one time division engineer of the Detroit terminal division of the Wabash and recently in charge of the construction of the Wabash Union Produce Terminal at Detroit, Mich., has been appointed construction engineer of the Wabash, with headquarters at St. Louis, Mo.

Mechanical

A. F. Moore, general foreman of the Pennsylvania with headquarters at Columbus, Ohio has been appointed assistant chief car inspector in the office of the general superintendent of motive power with headquarters at Chicago to succeed **P. S. Walter** retired.

S. S. Talbert, general foreman at the Mobile (Ala.) shops of the Louisville & Nashville, has been promoted to master mechanic, with headquarters at the same point, succeeding **J. D. Maxwell,** deceased.

Traffic

H. E. Cain has been appointed district passenger agent of the Pennsylvania, with headquarters at Birmingham, Ala.

Lewis L. Fellows, general agent of the New York, Chicago & St. Louis at Indianapolis, Ind., has retired.

O. F. Shedd has been appointed general agent of the Michigan Central, with jurisdiction over the railroad's properties in St. Joseph and Benton Harbor, Mich.

John F. Dalton, general freight and passenger agent of the Norfolk Southern with headquarters at Norfolk, Va., has been appointed traffic manager, with the same headquarters. Mr. Dalton was born on April 23, 1890, at Norfolk, Va., and was educated in St. Mary's Academy, the public schools and Norfolk College. He entered railway service in 1900 as a messenger on the Southern. In 1906 he entered the service of the Seaboard Air Line in the general freight

John F. Dalton

department, and in 1908 became chief rate clerk of the Norfolk Southern. Mr. Dalton was appointed assistant general freight agent in 1914 and general freight and passenger agent in 1916, which position he was holding at the time of his recent appointment.

Raymond W. Anderson, who has been appointed coal traffic manager of the Buffalo, Rochester & Pittsburgh, with headquarters at Rochester, N. Y., was born on August 20, 1895, at Big Run, Pa., and was educated in the Big Run

Raymond W. Anderson

High School and Clarion State Normal School. He entered railway service on September 15, 1916, with the Buffalo, Rochester & Pittsburgh and occupied various positions in the freight office of that road at DuBois, Pa., until May 1, 1920, with the exception of the time spent in the army from February, 1918, until September, 1919. On May 1, 1920, Mr. Anderson was appointed traveling freight agent at DuBois and served in that capacity at DuBois and at New Castle, until June 1, 1923, when he became chief clerk in the freight traffic

department at the general office in Rochester, N. Y. On January 1, 1928, he was appointed assistant general freight agent at Rochester which position he was holding at the time of his recent appointment.

Purchases and Stores

W. E. F. Kirk, division storekeeper of the Atchison, Topeka & Santa Fe at Ottawa, Kan., has been promoted to general lumber supervisor at Topeka, Kan., and is succeeded by **A. B. Sears,** storekeeper at Waynoka, Okla.

Special

D. Alleman, publicity manager of the Maine Central has resigned to engage in other business and the office has been abolished. **D. W. Bishop** will edit and supervise the Maine Central Employees' magazine.

E. C. Schmidt, manager of the Union Pacific's new bureau at Los Angeles, Cal., has been appointed director of news service at Omaha, Neb. succeeding **Alfred Pittman** who resigned on July 15. Mr. Schmidt will also have general charge of the Union Pacific magazine.

Obituary

Ora Taylor, assistant superintendent of the Southern division of the Pacific Electric, with headquarters at Los Angeles, Cal., died at the California Lutheran hospital in that city on July 28, following a heart attack.

Oscar S. Major, signal engineer of the Kansas City Southern with headquarters at Kansas City, Mo., died suddenly at Mulberry, Kan., on August 15.

E. O. Pritchard, general agent of the Georgia Railroad and the Atlanta & West Point, with headquarters at Atlanta, Ga., died on July 3.

Dr. John W. O'Connor, chief surgeon of the Denver & Rio Grande Western and the Rio Grande Southern from 1902 to 1923, died on August 5.

Leonard T. Johnston, division superintendent of the Chicago, Milwaukee, St. Paul & Pacific with headquarters at Minneapolis, Minn., died in that city on August 16 following an extended illness.

John H. Murphy, acting president of the New Orleans Public Belt and president of the John H. Murphy Iron Works died at New Orleans, La. on August 15.

J. M. Brown, assistant to the vice-president of the Chicago, Rock Island & Pacific with headquarters at Chicago, died in that city on August 19 from pleurisy.

Egbert M. Womack, assistant to the general passenger agent of the Louisville & Nashville with headquarters at Louisville, Ky., died on August 18 following a heart attack. He was born in 1864 at Farmville, Va. and entered railway service in 1881 with the Louisville, New Albany & Chicago (now the Chicago, Indianapolis & Louisville). During the following nine years he was rate clerk and chief clerk on various western roads and in 1900 entered the employ of the Louisville, Henderson & St. Louis. In 1914 he was promoted to assistant general passenger agent at Louisville which position he held until 1917 when he was advanced to general passenger agent. In June, 1929 he was appointed assistant to the general passenger agent of the Louisville & Nashville which position he has held until his death.

Albert N. Lyon, assistant to the general superintendent of the Ohio Central lines of the New York Central, who died at Charleston, W. Va., on July 29, had been in railway service for 39 years. He was born at Granville, Ohio, on May 10, 1869, and entered railroad service at the age of 14 years as a telegraph operator and station agent on the Toledo & Ohio Central (now part of the New York Central). From 1890 to 1906 Mr. Lyon served as train dispatcher and chief dispatcher on the T. & O. C. and he then became a trainmaster on the Kanawha & Michigan (now part of the New York Central), being promoted to superintendent at Charleston in 1909. In 1910 he was promoted to general superintendent of the K. & M.; later his title was changed to superintendent and since 1928 he had served as assistant to the general superintendent of the New York Central at Charleston.

* * * *

A Group of Girl Guides on the C.P.R. at Lake Louise

Two Sections—Section Two

Railway Age

Motor Transport Section

Devoted to the Co-ordination of Railway and Highway Service

TRANSPORTATION LIBRARY
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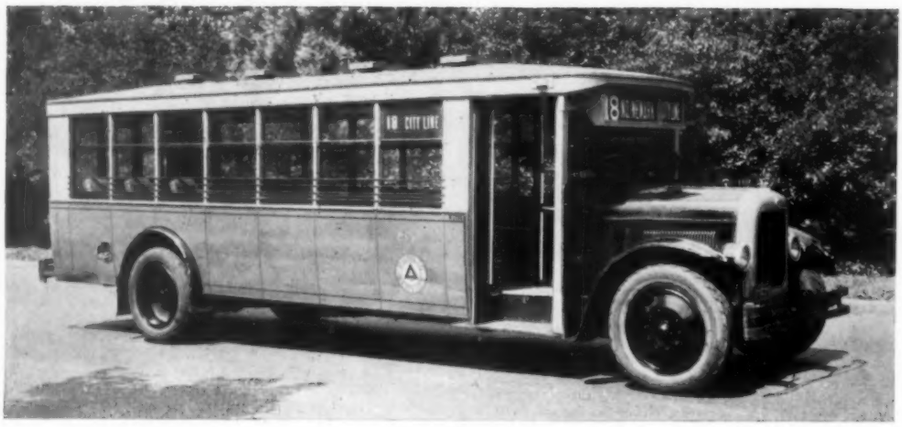
AUGUST 24, 1929

The Story of the New England Transportation Company



Making a Good Bus Better

BUS manufacturers today are building into their vehicles such structural elements as will assure comfort and convenience for the passenger and economy of operation for the owner.

Comfortable seats, attractive appearance, friendly atmosphere, safe and reliable service—these are advantages that appeal to the bus patron . . . Small operating expense, low upkeep cost, easy maintenance, profits—these are factors that the operator seeks.

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Better for the patron because short, smooth stops without driver fatigue assure greater safety and permit faster schedules. Better for the operator because of greater security, increased passenger mileage, quicker movement in traffic, lower brake maintenance.

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WESTINGHOUSE
AUTOMOTIVE AIR BRAKES

Railway Age
Motor Transport Section
Devoted to the Co-ordination of Railway and Highway Service

Vol. 87 *August 24, 1929* *No. 8*

The Tax Question

MOTOR coach operators are becoming perturbed because of the trend of the taxes assessed against their rolling stock. Taxes on motor coaches in general have been increasing steadily during recent years until now the average annual total taxes assessed against common carrier motor coaches are almost twice as much as they were in 1924. Furthermore, new ways of taxing motor coaches are constantly being devised by the states, with the result that there is no indication that the peak of motor coach taxes has been reached or is likely to be reached in the near future.

A. D. Ferguson, assistant engineer in the Bureau of Economics of the Canadian National Railways, has made an exhaustive study of motor coach taxes in the United States and their trend since 1924, and the results of his study are set forth in an article in this issue of the *Motor Transport Section*. Certain outstanding findings of Mr. Ferguson deserve emphasis.

Gas Taxes Increasing

With respect to registration fees, he finds a complete lack of uniformity in the assessments of the various states, but the average registration fee, considering all the states, has shown only a slight increase during the past six years. It is in the "special" taxes that the increase, not only in the number of such taxes, but also in their amount, has been great. In 1924, 35 states imposed a gasoline tax, in most cases amounting to 2 cents per gallon, or less. In 1929, all states are imposing such a tax, and in only nine instances is the tax as low as 2 cents per gallon, or less. The general trend at this time appears to be toward a maximum gasoline tax of 5 cents per gallon, although one state will have a 6 cents per gallon tax in effect this year, so that it is difficult to say just what the maximum ultimately will be. At the present time, the gasoline taxes amount to 45 per cent of the average annual taxes paid on motor coaches, the annual average gasoline tax paid in 1929 representing an increase of approximately 152 per cent since 1924.

Special taxes, apart from registration fees and gasoline taxes, and assessed on the basis of the potential or actual "use" of the highways if not on a flat rate basis, show little uniformity as between the states, but have substantially increased since 1924. The average special tax in 1924 was $158.32, while in 1929 it is $274.96. According to Mr. Ferguson, the total average motor coach tax paid in 1924 represented 2.4 per cent of the gross income of the coach, while in 1929, the estimated percentage has increased to 4.6 per cent of the gross income.

Lack of Uniformity

One of the most striking features of the present tax situation is the utter lack of uniformity in taxes assessed in the various states. In numerous instances the differences in taxes charged against motor coaches in neighboring states amount to hundreds of dollars. Such lack of uniformity is a result of the equally great lack of agreement which exists as to the bases on which a motor coach should be taxed. In some states the purpose of the taxes assessed seems to be to charge the motor coaches all that they can bear. In other states the tendency seems to be to place as slight a tax burden as possible on motor coach transportation.

That motor coaches should be taxed goes, of course, without question. On what grounds they should be taxed, and how much they should be taxed, are questions which are debatable and will probably always be debated. Some advocate a charge against motor coaches for the "privilege of using the public highways for private gain." It has been repeatedly claimed that the railways, which provide their own right of way, are compelled to compete with motor coaches which operate on a right of way furnished to them "practically free of charge."

Tax Question Not Buried

The motor coach taxation question is a livelier issue now than at any time in the past. Motor coach taxes are increasing, and the railways, which were perhaps the original advocates of high motor coach taxes are now, as motor coach operators themselves, helping to pay them.

The wide variation in the taxes being paid in different parts of the country shows that they are not based on any generally accepted principle, but are being de-

termined in the most arbitrary and haphazard ways, and largely in accordance with local conditions and prejudices. Not only do the bases of taxation differ widely in different territories, but they are being changed so rapidly and radically that the present or prospective motor coach operator cannot make plans for the future with any definite idea as to the amount of the taxes he will have to pay. As a practical matter, the cause for the motor coach operator's greatest concern is the present steady increases in motor coach taxes, which, whether they are now too low or too high, are certain to become high enough and then too high, if the present rate of increase in taxes continues. This is a situation which seems to demand the immediate attention of all concerned in motor coach operation.

Since some railways operate motor coaches while others do not, there may be little possibility of ever getting all the railways to agree on the motor coach tax question. "Reasonable" taxes to a railway motor coach operator might appear most unreasonable to a railway not operating motor coaches. But there should be some means of determining a fair basis of taxation, and the sooner it is arrived at the better it will be for the motor transportation industry.

Taxes and the tax question will always be with us, an ever present problem. Surely no one will contend, however, that the existing situation, marked not only by steadily increasing taxes, but also by an utter lack of uniformity in the amounts assessed by the different states, is as it should be.

Many Independent Lines Bought by Railways

LITERALLY scores of independently-owned motor coach lines have been bought by many steam railways during the past nine months. This wholesale acquisition by the railways of small, and generally not too secure, coach lines is one of the most interesting occurrences of transportation history during this period. The end has by no means yet been reached, for the railways are constantly finding additional places where they wish to operate motor coaches, but where they cannot without extreme difficulty secure the necessary permission to do so from the state regulatory commissions except through the acquisition of the operating certificates of the operators already doing business in that territory.

The history of motor coach transportation during the past two years has been one of consolidation upon consolidation. With the motor coach demonstrating its ability to provide long-haul transportation as well as short-haul, long-distance service has been made possible through the hooking up of many short lines. In the beginning, the principal consolidators were strongly-financed independent motor coach operating companies, but more recently the steam railways have been foremost in this respect. Recently, purchases of a number of independent motor coach lines have been made by the Union Pacific and the St. Louis Southwestern, among others, while the Missouri Pacific has probably acquired more than any other railway.

This situation makes the procedure in connection with the purchase of an independent motor coach line a matter of great present interest to the railways. Believing that a discussion of experiences encountered in purchasing such lines would be of interest to railway officers in general, the *Railway Age* asked a well-known officer of a railway, who has had considerable experience along this line, to make the knowledge that he had gained available to its readers. He consented to do so, and his article entitled "The Problems of Buying Motor Coach Lines" appears on another page of this issue of the *Motor Transport Section.*

Safety in Motor Coach Operation

THE paramount consideration in motor coach operation, or in any other kind of public transportation service, is safety. Safe operation, therefore, is of far greater concern to officers in charge of motor coach operation than on-time operation.

During recent months there has seemed to be a larger number than usual of accidents in which motor coach passengers have been killed or injured. Some of these accidents, perhaps, were unavoidable; others, if reports concerning them are correct, might have been avoided if the drivers of the coaches involved had observed the most elementary rules of safe driving.

Operating as they do on public highways where automobiles driven by untrained individuals outnumber motor coaches more than one hundred to one, some accidents to motor coaches almost inevitably will occur. However, even these accidents will be reduced, or their effects minimized, if the motor coach drivers are instructed and compelled to observe certain well-known rules of safe motor coach operation. Complete control of his motor coach at all times, which under most conditions rules out speeds in excess of 30 to 35 miles an hour, should be rigidly required of drivers at all times. The one rule which appears in every motor coach operating company's book of operating rules is that motor coach drivers must stop their vehicles at railroad grade crossings, and to make sure that the way is clear before proceeding; yet even this requirement is not always observed, as evidenced by serious collisions between motor coaches and trains, which have cost numerous lives.

Safety in operation is not an unattainable goal. It cannot be secured, however, without proper managerial supervision. Such supervision is always found in every case of a motor coach company with an accident record of which it need not be ashamed.

Who Shall Attend Motor Transport Division Meetings

ATTENDANCE at the meetings of the Motor Transport Division of the American Railway Association from the outset has been restricted, insofar as the regular sessions are concerned, to representatives of steam railways or their motor transport subsidiaries. Representatives of independent highway operating companies, as well as representatives of the manufacturers of motor transport equipment, have had to remain on the outside of the division's meetings, except on the occasion of the open meetings, held customarily on the last day of each convention.

There are reasons both for and against this "closed door" policy of the division. A year or two ago, the reasons in its favor probably outweighed the considerations in support of a less restrictive plan. Now, however, the motor transport situation has so changed that there might well be reconsideration of the matter. In fact, one important development, which has taken place since the last meeting of the division was held, brings the question of who shall be admitted to meetings of the Motor Transport Division squarely before it. This development is the appearance of important and previously independent motor coach operating companies as allies but not strictly as subsidiaries of the railways. For example, in the east the Pennsylvania has a "substantial" interest in the Greyhound Lines, and to all intents and purposes this operating organization is functioning in behalf of the railway exactly as a subsidiary company would. Yet the Greyhound Lines are not a Pennsylvania subsidiary, although, as stated, the Pennsylvania does have a financial interest in the company and representation on its board of directors.

The same is true of the relationship between the Great Northern and the Northland-Greyhound Lines, which recently replaced the Northland Transportation Company, formerly the out-and-out motor coach operating subsidiary of the Great Northern. Likewise is the position of the Southern Pacific with respect to the newly-organized company on the Pacific coast, Pacific Transportation Securities, Inc., which operates the motor coach lines of a number of companies, including the Southern Pacific Motor Transport Company as well as previously independent organizations. Thomas B. Wilson, the vice-chairman of the Motor Transport Division, in charge of the motor coach section, is in fact president of the Pacific Transportation Securities, Inc.

Are the officers of these companies to be admitted to meetings of the Motor Transport Division? These companies are neither railway subsidiaries, nor are they independent companies. A case might be made out for them on either side of the question.

Should not the Motor Transport Division take cognizance of this new situation and make such revisions as may be necessary, either formally or informally, of its rules, in order that the way may be opened for the admission of officers of these companies to its meetings? After all, the fundamental object of the division is the development of motor transportation by the steam railways. The division needs all the help that it can secure if it is to attain this object, and such help, we believe, will be forthcoming if the division not only will permit but will cordially invite representatives of these allied companies to attend its meetings.

Likewise, something should be done about the admission to the meetings of the Motor Transport Division of representatives of manufacturers of motor transport equipment. The arrangement existing in the past, of admitting representatives of manufacturers and other non-railway organizations to open meetings held on the last day of each convention is rather generally admitted to be unsatisfactory. Much, we believe, will be added, and little, if anything, detracted from the value of the division meetings if all who have something substantial to contribute to its work are invited to participate.

Co-operation in Solving Motor Transport Problems

ONE of the factors which have enabled the expansion of the motor transport operations of the railways to proceed with fewer mistakes than might have been expected is the willingness of those more experienced in the operation of motor coaches and motor trucks in co-ordination with railway service, to give the benefit of their experience to others who happen to be newer at the business. In almost every instance of a railway beginning motor coach or motor truck operation, its first step is to send the officer or officers in charge of its new service on a trip of inspection over the highway operations of other railways. By this means, the "students" in the business of motor transportation are advised how they can avoid the pitfalls which beset the path of the pioneers in such service.

It is very gratifying to note the consideration and patience shown by the more experienced railway officers to the inquiries which steadily pour in. If they had nothing to do but answer such inquiries, they could not be more courteous in their replies.

The "Questions and Answers" department in the *Motor Transport Section* was established for the purpose of making unnecessary, to as great an extent as possible, direct and voluminous correspondence between motor transport officers on questions of the best procedure common to every motor coach or motor truck operation. In the last two issues, five questions submitted by our readers were published in this department. Up to the present time more than twenty replies to these questions have been contributed and published. There could scarcely be a better example of the hearty spirit of co-operation that exists among the officers in charge of the motor transport activities of the railways.

The Story of the

NEW ENGLAND

How it happened to be organization, and policies which

IN every important change in modes and methods of transportation, the established carriers invariably have been slow to accept the new order, and it has devolved upon the so-called independent, the promoter or the dreamer to pioneer and develop each new phase until it reached the point of public acceptance. Such is the life story of the stage coach, the canal boat, the railroad, the highway motor coach, the airplane and the dirigible.

For years prior to July, 1925, transportation history was but repeating itself, especially in New England and particularly with reference to passenger transportation. We will not go deeply into detail, but will point out three phases which have resulted in the present day motor coach service, operated by old established rail carriers and their subsidiaries:—

Much has been said and written about the New Haven's motor coach operating subsidiary, the New England Transportation Company, for it is in many respects the leading railway motor coach operating company. But its interesting history and organization, and its precedent-setting accomplishments have never been so fully described as in this article by Mr. Montgomery. — *The Editor.*

First: The intra-city-jitney versus the trolley car. This worked to the detriment of the revenue of the trolley companies. Jitney operators used anything of the automotive type on four wheels, which strange to note, was accepted by the public as worthy of their patronage.

Second: The inter-urban-jitney versus the trolley car and the railroads. This was a natural sequence of the first phase. Jitney operators expanded and commenced to operate inter-urban service, competing alike with trolley cars and railroads, with the result of curtailment of the service, and reduction of the revenue of the trolley and railroad companies, inasmuch as the highway method of transportation obviously appealed to the travelling public.

Third: The entrance of the trolley and railroad companies into the highway transportation field.

Beginning of Regulation

At first, the jitney operators were not under regulation other than that provided in local city or police ordinances, and in many communities there was no attempt to regulate such public carriers. Eventually, the various state governments of New England realized the necessity for regulation and vested authority in their respective public utility commissions (1921 in Connecticut), with the result that rules and regulations were promulgated applying to intra-state highway operations and covering vehicle requirements as to mechanical and body details which have been more or less conflicting between the various states. They also established a policy with reference to public necessity and convenience concerning applications for certificates authorizing motor coach operation over the highways of the respective states. Certificates pending at that time in the majority of instances covered highway operations in direct competition with long established carriers such as the railroads.

However, independent highway operators were in many instances established prior to the institution of general regulation, which condition was brought about largely because of the attitude of the railroads and trolley companies in neglecting to give serious consideration to this new method of transportation. Under the circumstances, the public utility commissions, obviously basing their conclusions on the fact that the already established highway carriers were accepted and demanded by the travelling public, furnished "certificates of public convenience and necessity" to these operators; and it was not until about 1925 that the railroad and trolley operators fully realized that the jitney operators were securing the cream of the transportation business and appreciated that the permanency of this mode of transportation made it a factor worthy of every consideration.

The above may be considered also as more or less representative of the situation throughout the United States, but insofar as this article is concerned, possitively so with reference to New England territory served by the New Haven railroad and its subsidiaries.

Benefits to Trolley Lines

Concerning the phase in which the trolley companies, subsidiary to the New Haven railroad, were directly interested, investigation developed: (1) that it was practicable to co-ordinate service on light city lines,

By Earle S. Montgomery
Special Assistant to Vice-President, N. Y., N. H. & H.

TRANSPORTATION CO.

organized, the plan of its
the standards and
it has adopted

where the individual car-loading and headway were not such as to warrant the expense of operating the trolley cars except during peak loading hours, with highway motor coaches; (2) that economy of installation of motor coach operation and its flexibility made possible the extension of operations into remunerative territory which would otherwise have been untapped because of heavy initial expenditures for track, overhead wire, etc., thus permitting further co-ordination of trolley and coach service; (3) that it was advantageous to abandon certain interurban trolley lines where trolley cars were operating over directly owned or leased rails and to replace them with highway vehicles, which, of course, meant decided economy in the cost of operation while still furnishing transportation demanded by the travelling public.

This general scheme is being followed with the result of gradually increasing the patronage, which is plainly reflected in the revenue. At present, a comprehensive study is being made of all operating divisions to ascertain the possibility and practicability of replacement of trolley by motor coach operation, for the benefit of both the travelling public and the operator. At the present time, the Springfield Street Railway operates 50 motor coaches, the Worcester Consolidated Street Railway has 62, the Connecticut Company has 153, and the County Transportation Company has 62. All the companies have additional service equipment such as wreckers, express cars, etc.

Interior of Standard Semi-Deluxe New England Motor Coach

Railroad Organizes Subsidiary

In the summer of 1925, the New Haven organized and incorporated a highway subsidiary, the New England Transportation Company, under the laws of the Commonwealth of Massachusetts. Insofar as operation, accounting and maintenance are concerned, it is an organization separate and distinct from the parent company. However, pertaining to finance, law and purchasing, the policy and more or less the administration is regulated by the New Haven railroad, and to the mutual advantage of both companies. The company was formed for the purpose of protecting the passenger traffic of the railroad and in an effort to recover what had been lost to the highway operators. It has been desirable and necessary, of course, to comply with the various rules and regulations as laid down by the various state regulatory bodies, involving permission for the operation of routes and design and maintenance of coaches.

It was possible in some instances to originate highway service and supplement train service with resulting rail savings, and also to abandon specific short lines. Because of the fact that independent operators had preceded the railroad in engaging in highway transportation, many of the desirable highway routes had been turned over to these so-called independents, and the New England Transportation Company found it necessary to purchase outright many of these essential routes. As of August 1, 1928, there were 25 rail-saving lines, 11 lines supplementary to rail (some of the routes which may be considered as supplementary to rail are likewise in part rail-saving lines,) 5 summer lines, 6 allied lines and 16 other lines, or a total of 63 lines, comprising approximately 2,205 total route miles, covering 1,520 total road miles. During the calendar year 1928, the New England Transportation Company carried 4,868,102 revenue passengers and operated 8,294,121 coach miles.

Organization of N. E. T.

The offices of the president, auditor, traffic manager, treasurer and general manager are located in South Station Boston, and there is a vice-president at Providence. The office of the general superintendent is located at Providence, R. I. The system is divided into four divisions at the present time with superintendents located at Brockton, Mass.; Providence, R. I.; Hartford, Conn.; and New York. For maintenance purposes, the New England Transportation Company's territory is divided into two regions, lines east and lines

west, with a mechanical superintendent of lines east located at Providence and reporting to the general manager. Advantage has been taken of the up-to-date facilities of the Connecticut Company to maintain the equipment of the New England Transportation Company lines in Connecticut and south-western Massachusetts, and this is maintained by the Connecticut Company under the supervision of its chief engineer of power and equipment, who is located at New Haven, working in conjunction with the General manager of the New England Transportation Company.

The vice-president in charge of purchases and stores of the New Haven has similar jurisdiction in the New England Transportation Company, and the purchasing organization of the parent company, at New Haven, functions for the highway subsidiary, with the New England Transportation Company storekeeper and force, located at Providence, having charge of all material and supplies for the lines east. On the lines west, the situation is handled by the Connecticut Company, working in conjunction with the vice-president of the railroad at New Haven.

First Equipment Ordered

At the time of the organization of the New England Transportation Company, various motor coach manufacturers were invited to appear in New Haven with sample coaches representative of their manufacture, for demonstration to assembled officials of the highway company. This was accomplished in July, 1925, and as a result, orders were immediately placed for de luxe equipment as follows: 12 Mack coaches, Model AB, 4 cyl., 25-passenger; 10 White coaches, Model 50 A. 4 cyl., 25-passenger; 6 International Harvester coaches, Model 54 H 1, 6 cyl., 29 passenger; and 10 Yellow coaches, Model Y, 6 cyl., 29-passenger.

All of these, with the exception of the International Harvesters, were the then standard products of the manufacturers, no attempt having been made at that time to buy equipment to the specifications of the purchaser, with the exception that the body work for erection on the International Harvester chassis was placed by the chassis manufacturer with the Brown Body Company of Cleveland, Ohio, representatives of which concern called upon the New England Transportation Company for ideas with reference to the manufacture of this particular consignment of bodies. It might be stated, therefore, that these six jobs were the first specification bodies of the New England Transportation Company. All of this equipment is now in service, with one exception.

Present Motor Coach Fleet

Since that time, the Fleet has been augmented by the purchase of cars of the above-mentioned makes and, in addition, Fageols, ACF's and Pierce-Arrows (all gas-mechanical) and by five gas-electric coaches delivered by the Versare Corporation, to the extent that the motor coach fleet of the New England Transportation Company at the present time comprises approximately 257 motor coaches. This coach equipment is supplemented by a five-ton Mack wrecker, two light trucks and Chrysler cars used as service equipment by the supervisory and mechanical inspectors.

At a meeting of the executives of various subsidiary companies of the New Haven railroad engaged in highway passenger transportation, held at Boston in 1927, a coach body specification committee was authorized, the object being that the coach body developed would be acceptable to and standard for all subsidiary companies of the railroad. This plan has been followed and has worked successfully to the benefit of all companies, since by purchasing chassis and body separately, it has been possible to make a material saving in the initial cost, and at the same time to obtain exactly the equipment desired. It is interesting to note that a great many of the features which have been embodied in this specification are also included in the standard specifications proposed by representatives of the public utility commissions, the Society of Automotive Engineers and other organizations.

Body Standards Adopted

In this connection, it has been possible, by the adoption of a semi-de luxe type of body for urban and interurban service, to improve materially the appearance of the equipment of the various subsidiary companies, enhancing its "rider appeal." The composite 29-passenger body has been standard to date, with a 28-ft. over-all length, 74-in. headroom, and 96-in. width. It has been the practice to embody in the standard specifications features required by all states served, in order to provide a coach which may be used throughout New England territory, thereby permitting flexibility in operation.

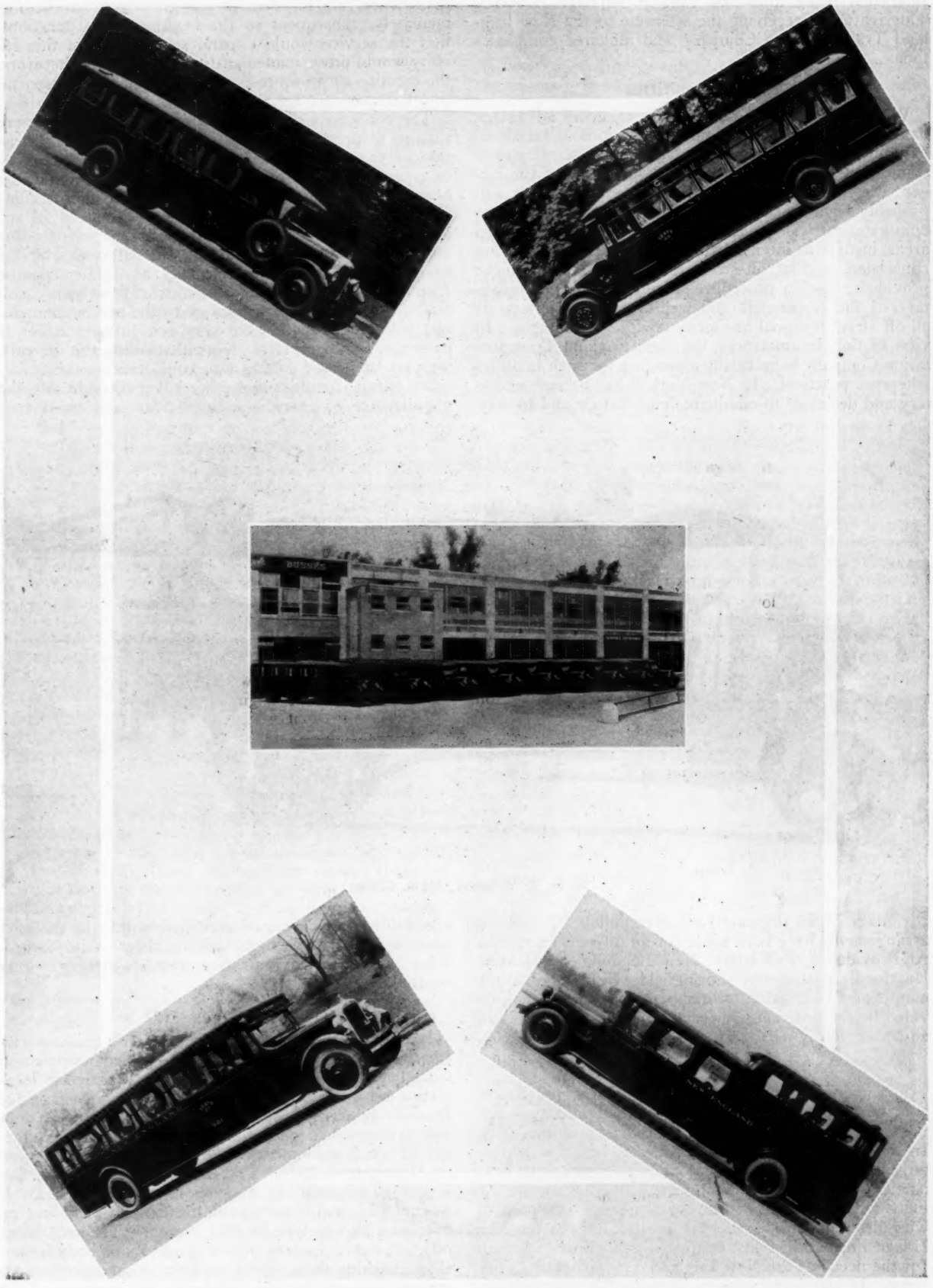
While it has been considered desirable to provide a coach in excess of 28-ft. over-all in length, it has not been possible to do so because of the requirements heretofore of the Commonwealth of Massachusetts. However, a bill has been passed recently by the Massachusetts legislature, and approved by the governor, providing for a 33-ft. over-all length, which will permit embodying in our specifications an over-all length in excess of 28 ft.

With the exception of the equipment used on the New York-Boston and New York-Pittsfield lines, this standard has been followed. It was considered desirable at the time of the origination of New York service to furnish equipment which would provide for improved baggage-carrying facilities and at the same time have an observation feature for operation over this scenic route of approximately two hundred and forty miles. This was accomplished by the purchase of semi-double deck ACF coaches of the "Newell" design.

The Versare gas-electrics have been provided for service between Providence and Bristol, where the patronage is extremely heavy, especially during the so-called peak hours, and the acquisition of these coaches permits the carriage of maximum seating loads of 39 with an equal number of standees, or as many as the laws of the states will permit. This, of course, promotes economy in operation by the elimination of at least two of the standard 29-passenger coaches.

Equipment Operated Over Full Anticipated Life

Previous to 1924-1925, highway coaches were nothing more or less than bodies mounted on truck chassis, and in other respects also, the manufacture of motor coaches was in the experimental state. This is somewhat the state of affairs at the present time, but it is not now as acute a condition as then, when the operator was faced with the necessity for the retirement of equipment prior to the end of its normal mechanical or revenue-earning life, because of obsolescence. The equipment of the New England Transportation Company can be operated over its full anticipated life of usefulness without danger of being retired because of change in motor coach styles, even though the present trend in manufacture seems to be from the composite to the so-called all-metal or duralumin body. There are many developments yet desirable in motor coach bodies, a major con-

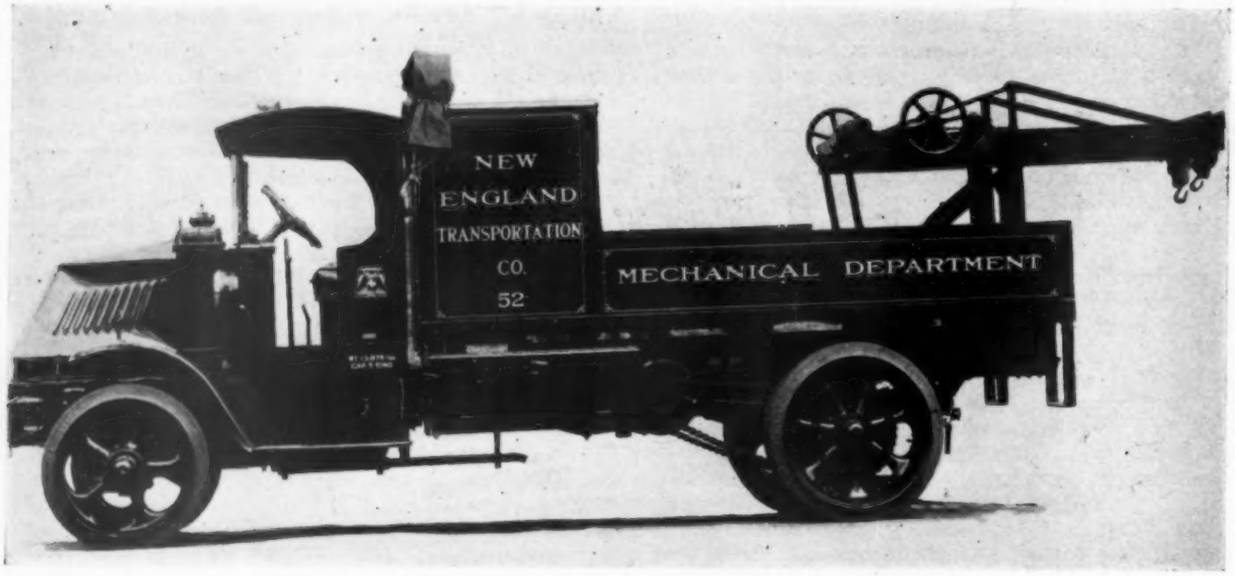


Representative Motor Coaches in the New England Transportation Co.'s Fleet

sideration being improved baggage carriage facilities. This feature is receiving the attention of the New England Transportation Company and affiliated companies today.

Station Facilities

Where it has been possible to do so, every advantage has been taken to use the railroad stations as terminals or points of call for highway coach routes. Highway congestion is becoming a major issue in all of the larger cities, and to overcome this to some extent it will probably be necessary for the municipal authorities to eliminate curb stops, at least in restricted downtown areas, insofar as inter-urban motor coach operations are concerned, so that off-street terminals will have to be provided. Such a procedure should react to the advantage of the responsible and well-organized carriers, as an off-street terminal has many obvious advantages. In view of the circumstances, the New England Transportation Company is gradually arranging for such facilities wherever practical. In New York it has become necessary and desirable to eliminate "curb" stops and to take advantage of the organized coach terminals. At Boston arrangements have been made for an off-street terminal. At Providence, Fall River, New London, New Haven, Hartford, Waterbury, Springfield, Fitchburg, Willimantic and Worcester, terminal facilities have been provided by the erection of special buildings and by taking advantage of hotel facilities.



N. E. T. Wrecker, Mack Chassis

Maintenance Provisions

For maintenance purposes, the New England Transportation Company territory is divided into two portions, as already indicated, i.e., lines east and lines west. In the case of the lines west, it was desirable to take advantage of the organization and facilities of the Connecticut Company, and arrangements were made accordingly. The lines east, however, presented a problem with different aspects; there is no subsidiary of the New Haven railroad in that territory with facilities adequate for the needs of the New England Transportation Company. It was imperative to arrange for a centralized temporary garage facility, and this was accomplished by renting the so-called Standard garage on Eddy St., Providence, R. I. But it was apparent almost immediately, subsequent to the beginning of operations, that the service would expand so rapidly that this facility would prove inadequate in a short time; therefore, the erection of an up-to-date New England Transportation Company garage was planned.

The conditions during the winter of 1925-1926 were such as to present manifold difficulties to the organization of the mechanical department in the maintenance of equipment. We were faced with severe weather; a heavy blizzard on February 5 caused an almost complete tie-up of service, and again on February 12 another tie-up occurred because of a blizzard. Numerous coaches were snowbound, and it was extremely difficult to handle the situation, especially at isolated points. Ice-rutted roads caused numerous side-swiping accidents, resulting in much damage to the new equipment, but fortunately there were very few injuries either to passengers or operators. Notwithstanding the difficulties presented, and taking into consideration the inadequate garage facilities and other adverse conditions, the maintenance of coach equipment was performed very creditably. However, in anticipation that in the very near future, a modern garage and shop would be provided, plans for organization and maintenance were drafted.

Providence Garage

It was in July, 1926 that a location for the new garage was decided upon in Providence. Construction work began on August 2, 1926, and was carried to completion on February 10, 1927. The complete transfer from Eddy Street to the new garage on Kinsley Avenue was accomplished on January 15, 1927, although storage of coach equipment at the new facility commenced on December 4, 1926. The Kinsley Avenue garage has a storage capacity of approximately 70 coaches. It is equipped with every modern feature, including an overhead blower type heating system (fuel used being oil); it has a battery room, paint shop, body repair shop, machine shop, stores department, and every modern convenience for the well-being and comfort of the men. This garage facility is organized to take care of all inspections and light repairs for coaches operating

in and out of Providence, as well as all heavy repairs for coaches operating in the territory known as lines east.

Maintenance at Remote Points

Because of the conditions incident to operation, such as isolated lines and long hauls, it is necessary that one or more coaches be stored and serviced at a number of remote points. These are known as "tie-up" points, and it has been the practice to arrange with local garage men for the rental of storage space and possibly for the washing of coaches. At points where it is considered that the expense is warranted, in other words where four or more coaches may be tied up, a mechanic is employed to take care of running repairs and inspections, which obviates the necessity of operating coaches, either dead-head or in revenue service, back to the Providence garage or garages of the Connecticut Company for necessary attention.

A program and system of repairs has been promulgated on the mileage basis; heavy repairs, while scheduled on the basis of mileage, are arranged also as "unit overhaul," which permits maximum revenue service with minimum non-revenue tie-up for repairs.

The accounts have been classified according to best practice, taking advantage of the years of experience of the parent company and of other responsible carriers who were engaged in this method of transportation several years prior to the New England Transportation Company. The use of preprinted tickets as on the railroad has been resorted to to a great extent, although on some short haul lines, the use of coin receivers, such as the Johnson fare box, and on others the installation of the cash register, have been found to be most practicable. The method of issuing preprinted tickets as well as the collection of fares is still experimental, as there are conditions peculiar to highway transportation which are not encountered by the railroad, necessitating a change in methods.

High-Grade Personnel Secured

The personnel of the New England Transportation Company is noticeably high-grade. At the time of the organization of the company, it was the policy to re-employ men as drivers who were or had been working for the New Haven railroad; but with the rapid expansion of the business it was found that the demand for drivers far exceeded this source of supply, and it became necessary to employ qualified drivers from sources other than the ranks of the railroad, although preference is given whenever practicable to railroad employees.

Pursuant to an agreement between representatives of the executives of the company and the drivers, the system has been divided into four distinct rosters and a schedule of rates of pay has been placed into effect. Minor executives, such as starters and supervisors, have been promoted from the ranks, in pursuance of the policy to promote from the ranks or to procure men from the New Haven railroad, rather than to bring men in from the outside to fill positions.

The policy adopted by the New England Transportation Company has been one of co-ordination of highway service with the train service by replacing unprofitable branch or short haul passenger trains with motor coach highway service, and by the institution of highway coach service supplementary to existing train service during specific daily periods and over routes where it is essential to protect the business of the New Haven and its subsidiaries. The highway coach provides an economical vehicle for handling traffic on lines where train service is necessary only during peak movements, and the service established to supplant rail service and that which is supplementary to it, acts as a feeder to the railroad, the motor coach schedules usually coinciding with those of trains at junction points.

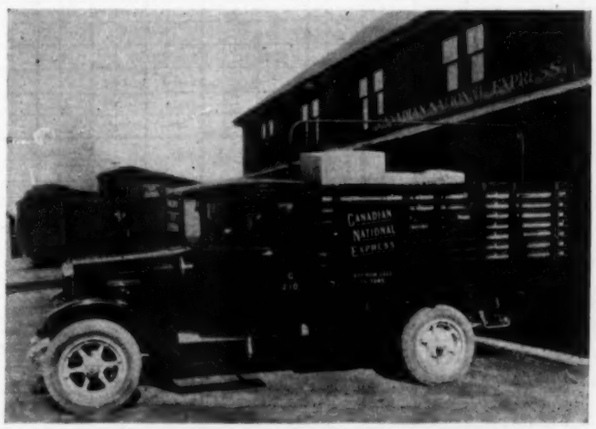
Coach Lines Must Benefit Railway

The purchase of independent highway lines has been made only on the basis that the acquisition of such lines will react to the benefit of the New Haven railroad and its subsidiaries as a whole, and not for the purpose of merely engaging in highway transportation; in other words, lines acquired are to be feeders or so-called rail-saving lines. Another consideration has been to refrain from entering territory which might be considered competitive with other rail carriers in New England.

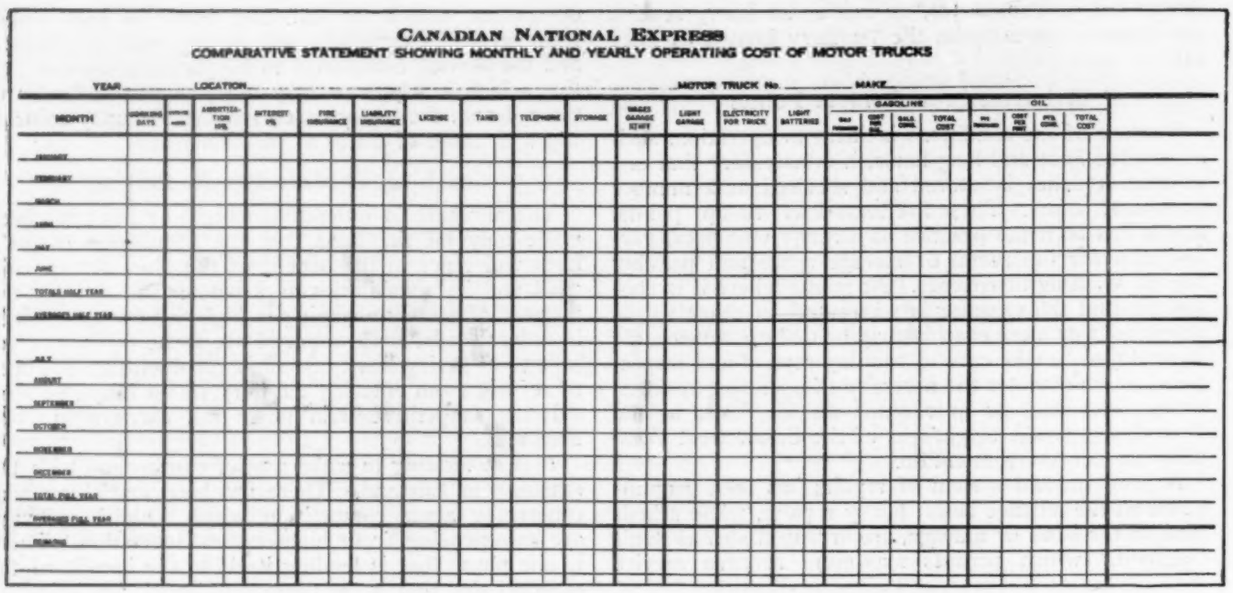
It is interesting to make a brief comparison with the situation in England. There has been much comment concerning acute competition which English railways are experiencing from highway transportation. There is one phase that is lending itself to the benefit of the railways and that is the passage of legislation granting, with few restrictions, to the four major railways charter authority to enter into the highway transportation field in their own respective territories. This should result in careful co-ordination of rail and highway transportation and should be highly beneficial to the travelling public of England. In this respect, the English railways' position is better than that of the American companies, as at least a step toward co-ordination has been made by the legislation placing the railways on an equal footing with highway operators.

C. N. R. Keeps Detailed Truck Cost Records

A CLOSE check on the cost of operating its large fleet of motor trucks is maintained by the express department of the Canadian National by means of the operating costs sheet, which is reproduced in two sections herewith. Each sheet is 32⅜ in. by 8½ in. in size, and is perforated in the middle, so that it can be bound in a large motor truck operating cost statement book. This book is kept in the office of W. C. Muir, general manager of the express department at



International Speed Truck Operated by Canadian National Express



CANADIAN NATIONAL EXPRESS

COMPARATIVE STATEMENT SHOWING MONTHLY AND YEARLY OPERATING COST OF MOTOR TRUCKS

YEAR _____ LOCATION _____ MOTOR TRUCK No. _____ MAKE _____

MONTH	WORKING DAYS	AMORTIZATION 10%	INTEREST 6%	FIRE INSURANCE	LIABILITY INSURANCE	LICENSE	TAXES	TELEPHONE	STORAGE	WAGES GARAGE STAFF	LIGHT GARAGE	ELECTRICITY FOR TRUCK	LIGHT BATTERIES	GASOLINE: GAL. CONS.	GASOLINE: TOTAL COST	OIL: TOTAL COST	
JANUARY																	
FEBRUARY																	
MARCH																	
APRIL																	
MAY																	
JUNE																	
TOTALS HALF YEAR																	
AVERAGES HALF YEAR																	
JULY																	
AUGUST																	
SEPTEMBER																	
OCTOBER																	
NOVEMBER																	
DECEMBER																	
TOTAL FISCAL YEAR																	
AVERAGES FISCAL YEAR																	
REMARKS																	

Fig. 1—The Left Half of the Cost Sheet Analyzes the Operating Charges

Montreal, Que., and it provides a ready means of detailed reference on the monthly, semi-yearly and yearly operations of the entire fleet of motor trucks, units of which are operated in all parts of Canada.

The various columns of the left-hand portion of the cost sheet have spaces to show information, by months, half years, and years, as to the number of working days and working hours of each truck, amortization and interest charges of 10% and 6% respectively, insurance charges, license fees, and taxes, overhead charges, and the cost and consumption of gasoline and oil. The right-hand side of the cost sheet shows particularly the maintenance charges under the various classifications, the wages of the driver and helper, and, at the extreme right, the total cost of operation per month and per day, the mileage per month, the rate of gasoline consumption, the cost of operation per mile, the number of hours out of service and the cause, and the percentage of idle time.

A close check is kept on all purchases for the operation and maintenance of the Canadian National Express motor trucks. All purchases are made by means of requisitions made out by the agents, which must have the manager's approval before the requisitions are filled. In cases of emergency, purchases up to $10 may be made by an agent; for emergency purchases amounting to more than $10, telegraphic approval of the manager must first be obtained.

The motor trucks operated by the Canadian National Express vary in rating from one ton to 2½ ton, most of them being of the 1½ ton size. The trucks are equipped with stake and panel bodies, and are painted in ultramarine blue and cream colors. The lettering on the bodies is gold colored.

CANADIAN NATIONAL EXPRESS

COMPARATIVE STATEMENT SHOWING MONTHLY AND YEARLY OPERATING COST OF MOTOR TRUCKS

CAPACITY _____ DATE PURCHASED _____ COST _____ GASOLINE OR ELECTRIC _____

	ENGINE	GATES	CONN.	SUPPLIES	ENGINE REPAIRS	CHASSIS REPAIRS	BODY REPAIRS	TIRE REPAIRS	TUBE REPLACEMENTS	PAINTING	INCIDENTALS	WAGES CHAUFFEUR	WAGES HELPER	TOTAL COST PER MONTH	COST PER DAY	MILES PER GAL. GAS.	HOURS OFF	CAUSE	% OF SERVICE
JANUARY																			
FEBRUARY																			
MARCH																			
APRIL																			
MAY																			
JUNE																			
TOTALS HALF YEAR																			
AVERAGES HALF YEAR																			
JULY																			
AUGUST																			
SEPTEMBER																			
OCTOBER																			
NOVEMBER																			
DECEMBER																			
TOTAL FISCAL YEAR																			
AVERAGES FISCAL YEAR																			
REMARKS																			

Fig. 2—The Right Half of the Cost Sheet Shows the Maintenance Charges

Millions of Dollars are Transported Through the Streets of New York in Armored Cars of This Type

Organization of a Metropolitan Trucking Service

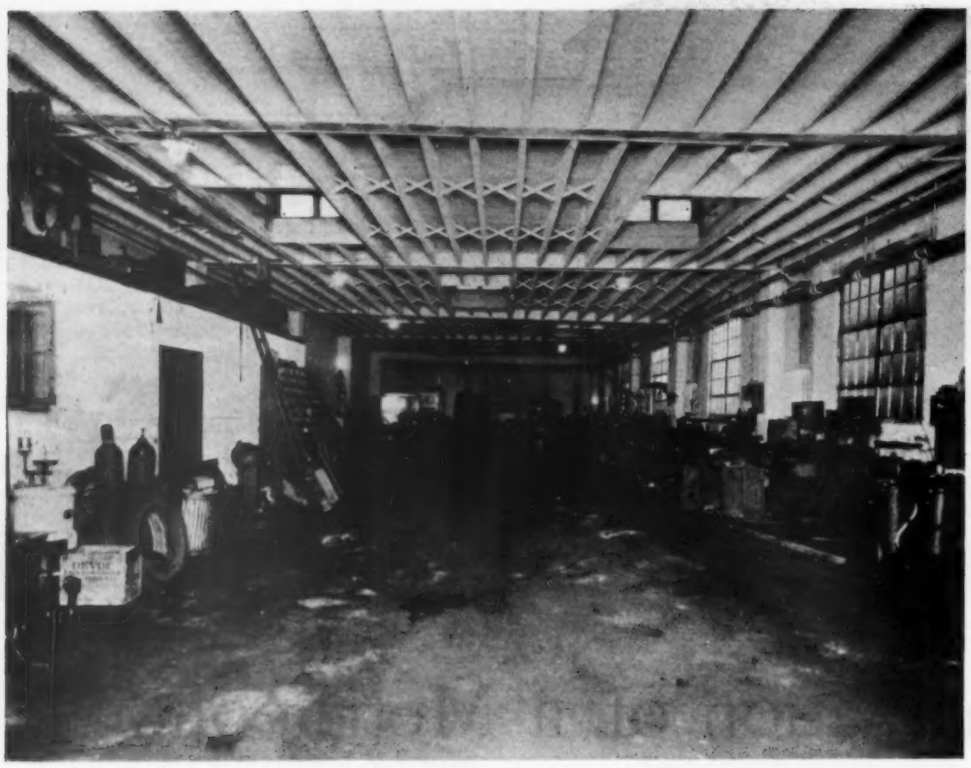
U. S. Trucking Corporation has twelve branches, each under a competent manager—Truck operators key to maintenance system

THE United States Distributing Corporation, of which the United States Trucking Corporation is a subsidiary company, was organized for the purpose of distributing coal, foodstuffs, merchandise and other commodities in the congested centers of the large cities of this country. The parent corporation is composed of eight subsidiary companies, of which the U. S. Trucking Corporation is one of the largest. It is divided into twelve branches, all of which operate in the metropolitan area centered about New York City. The branches are: General trucking, Beef and transfer, Stevedoring, Steel and structural, Hendrickson transfer, Monahan express, Parcel post. Armored car, Freight service, Independent Warehouses, Inc., and the Wright Tire Service Company.

Each of these branches is operated under a manager who is particularly competent to handle the specialized work of his branch. Each branch is operated as a separate business, each manager engaged in friendly rivalry with the others to make a good showing. A sufficient number of units of equipment is assigned to each branch manager, who is held responsible for its operation and maintenance. If, for instance, the general trucking branch is required to handle an increased volume of business which requires additional trucks, the manager will borrow trucks from other branch managers. A flat charge of so much per day is charged for the loan of equipment to another branch manager. If units of equipment are loaned for a considerable length of time, the borrowing branch must service the equipment.

The freight service branch, among its other activities, transfers freight for many of the railroads entering New York, among them the Pennsylvania, the New York Central, the Erie, the Lehigh Valley and the New Haven. A fleet of vehicles is assigned to transfer merchandise from the rail-head freight terminals to the various warehouse terminals and points of delivery in the city including "constructive station" and trucking-in-lieu-of-lighterage service. The company operates sixteen bonded and free warehouses in the City of New York. These warehouses contain about 1,000,000 sq. ft. of floor area. The inland or off-rail freight stations of the Pennsylvania, Erie and the Lehigh Valley are located in the lower floors of five of these warehouses, the trucking corporation handling the freight between these stations and the railroad terminals on the New Jersey side of the Hudson river. The upper stories are used for the general storage of merchandise.

Although the U. S. Trucking Corporation operates about 1,000 motor vehicles, it also has in service a large number of horse-drawn vehicles. The unavoidable delays at steamship piers through congested traffic have forced the use of horses, as it costs six cents a minute to maintain an automotive truck on the street, or $3.60 an hour for waiting time, and less than two cents per minute for a horse-drawn truck, or $1.20 an hour



General View of One of the Major Overhaul Repair Shops

for waiting time. Therefore, where delays are inevitable, horses are used. The cartage rates in New York are based on the time consumed rather than on distance.

Horse-drawn wagons are used exclusively in the parcel post branch which handles the transfer of this class of mail in the City of New York.

The Armored Car Branch

Several years ago the United States Distributing Corporation purchased from the Adams Express Armored Car Company its fleet of armored cars, together with some 400 contracts then in existence between New York financial houses and the Armored Car Company. Since then the business has been greatly increased and the movement of the armored cars about the streets of New York is a familiar sight.

These trucks are designed and operated so as to make them almost impregnable against attack. The bodies are made of alloy steel and the windows are fitted with bullet-proof glass. The wheels are fitted with solid tires to eliminate the possibility of punctures.

Each unit is manned by a group of guards especially trained for the work. A normal crew consists of four men, three of whom are inside of the car and one in the driver's compartment. When a delivery is to be made, the conductor unlocks the door leading into the interior of the car. He then steps down on the street with his hand on his pistol. Another guard exits from the car and faces the first guard. The third man with the money now comes from the car and places himself between the two guards. A guard remains inside of the

A Modern Well Equipped Paint Shop

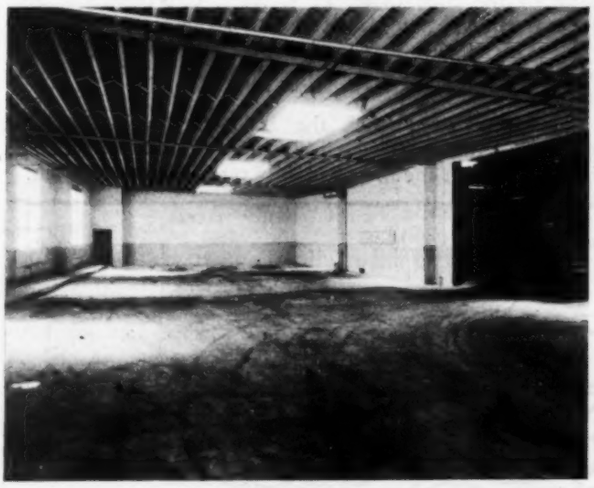
car with a machine gun to protect the men against an outside attack.

Before the guards leave the truck, the drive shaft is made inoperative by a mechanical device operated from within the truck body. This precaution is taken to prevent anyone from running away with the truck while a delivery is being made. Tear bombs are also carried inside of each car in case an attempt is made to overturn the car. If this should happen the tear bombs would be used to keep the attackers away until help arrived.

The Wright tire service was organized to keep all trucks used by the company properly equipped with tires. This service is also extended to many other individual trucking companies and large merchants maintaining their own trucks. One of the illustrations shows the room in which this work is handled. The equipment consists of a modern high-speed hydraulic press used for pressing off old tires and putting on new ones. Only one man is required in this shop.

The United States Trucking Corporation operates approximately 1,000 Mack trucks in the metropolitan area. The equipment is serviced in seven garages located in this area, but all of the major overhaul work is done in three company owned buildings which are used as repair shops. Even with these repair shop facilities for such a large fleet of trucks, the key to the maintenance problem is the truck operator. Each unit is driven by the same operator week in and week out. Thus he becomes entirely familiar with the functioning and peculiarities of his truck. The operator is held responsible for the performance of his truck. He is not only a driver, but must have sufficient mechanical knowledge to recognize strange knocks and when the unit is not working properly. He reports defects to the mechanical inspector located at each of the shops. At the end of each day he reports on the mechanical condition of the truck. If the engine is not functioning properly, he reports it and it is checked over by the chief mechanic. If for any reason a truck breaks down while in service and the failure can be attributed to the negligence of the operator the chief mechanic promptly reports the trouble to the manager and the driver is laid off without pay as long as it requires to repair the truck. Thus each driver is careful to report at once any suspicious trouble in order to protect his own interests. This plan has worked out very successfully as very few road failures occur because deferred maintenance does not exist under this system.

Some of the Trucks Garaged for Week-End Inspection

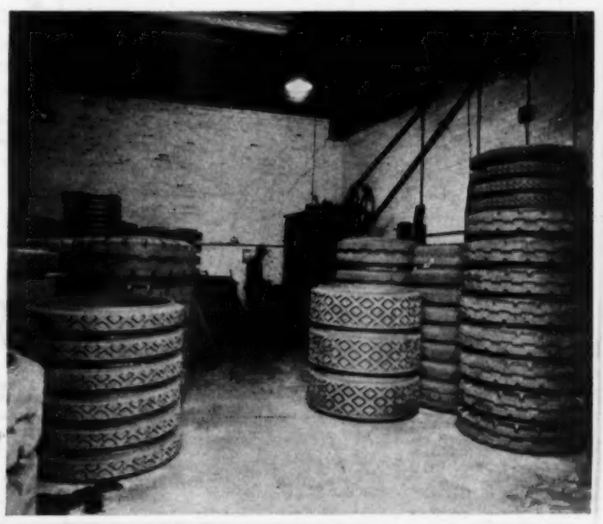


The Garages in Which the Trucks are Stored are Kept Immaculately Clean

Another factor that enters into keeping the fleet of trucks in serviceable condition is the unit replacement system of repairs. Since the fleet consists of one make of trucks, repaired spare motors, transmissions, differentials, drive shafts, etc., are always kept on hand. Thus if the motor of a truck is not functioning properly, it is removed and replaced with a repaired unit, and so on with the remainder of the major unit assemblies of a truck. Little time is required to change the units, with the result that the trucks are in service with a new motor while the defective engine is being overhauled.

The trucks are assembled in their respective garages over the week end, at which time they are inspected and necessary repairs are made before they are permitted to leave the garage.

One of the illustrations shows the paint shop which is modern as to design and equipment. From six to seven trucks are painted each week end. During the week the shop is kept busy painting the bodies of trucks



Shop of the Wright Tire Service Company

in for major repairs and also doing contract work for outside companies.

As mentioned before, the manager of each branch is held responsible for the equipment assigned to him. Since the bookkeeping for each division is kept separately, it is imperative that some equitable means be employed to charge for maintenance work. All major repair work is handled in the main shop as if it were a general repair garage. The repair charges are based on actual cost which includes labor and material, plus ten per cent for overhead charges. This system has worked out very satisfactorily, as each branch manager receives an itemized bill of repairs for each unit sent in for overhaul.

Even though the company operates a large fleet of trucks of its own, it does not have sufficient work to keep its shop forces always busy. As the best automobile mechanics obtainable are employed, it is imperative that they be kept busy so that they will remain with the company. To do this the fleets of large outside companies are repaired on a contract basis.

Missouri Pacific Operating Over 2857 Miles of Highway

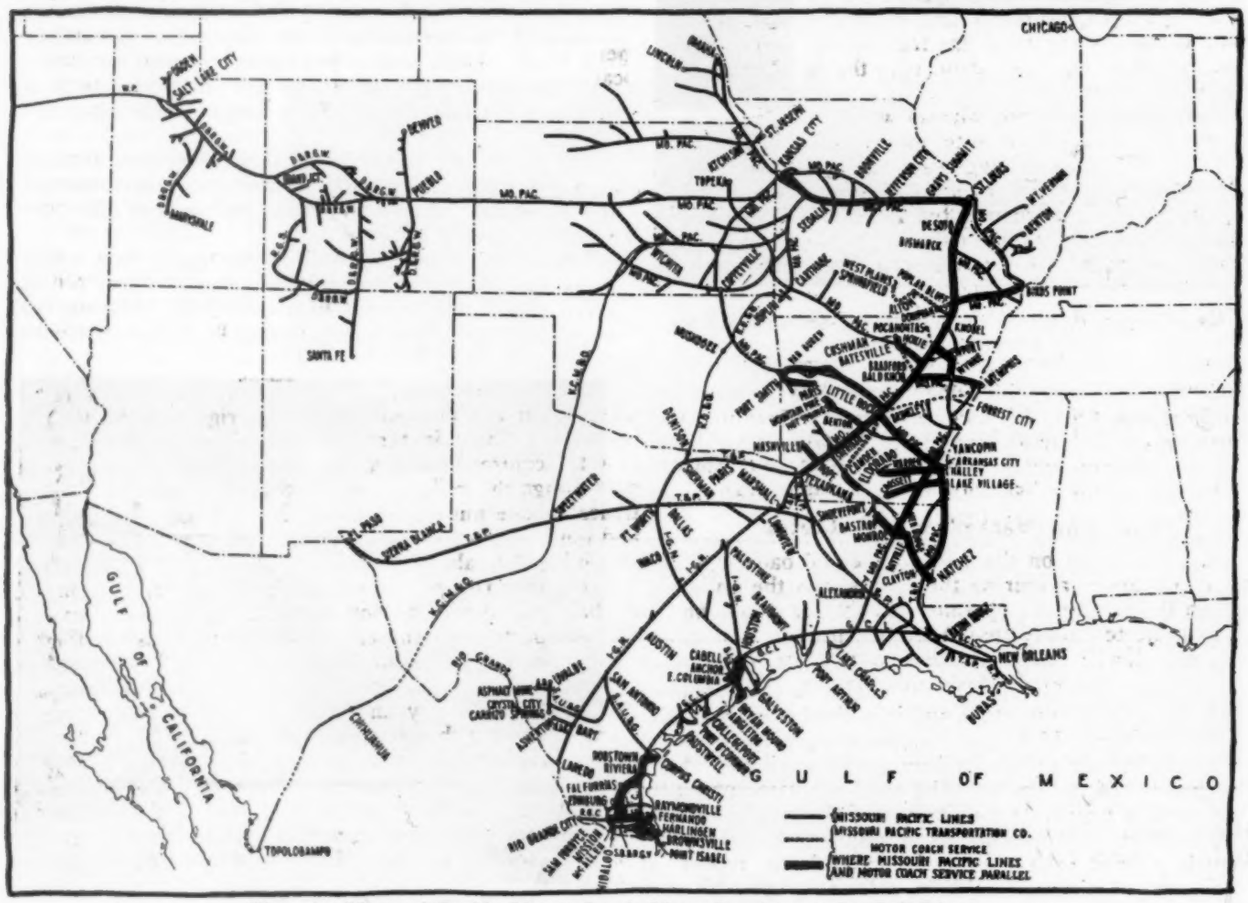
FOUR of the 11 states included in the Missouri Pacific Lines system are now being served by the motor coaches of the Missouri Pacific Transportation Company. This subsidiary organization, formed to augment the rail service of the parent company, is, through extensive development, rapidly becoming a large utility on its own account. The motor coach system, incorporated in November, 1928, already comprises a total of 2,857.6 route miles, operating approximately 19,000 coach miles daily. The four states served by the system are Arkansas, Missouri, Texas and Louisiana.

The major part of the system, 1,360.1 miles, thoroughly covers the state of Arkansas, linking the farthest towns, either directly or by convenient connections, with Little Rock, the capital and largest city. Missouri is next with 673.6 miles, Texas is third with 457.2 miles, and Louisiana, smallest, with 366.7 miles.

New equipment, built on the plans made by the company's automotive superintendent, was installed wherever it was needed. Schedules were adjusted and readjusted in an effort to determine the most convenient hours of departure and arrival and at the same time the most efficient running time of each coach. When these factors had been determined by numerous tests, the final schedules were established and the first official time table was published on April 1, 1929. A second issue, with map showing all of the Transportation Company's routes was issued on June 9.

In an explanation of the policies of the Missouri Pacific Transportation Company, contained in the first issue of the time table, P. J. Neff, vice-president and general manager, said, "It is our earnest desire to provide a courteous, safe and dependable highway transportation service, and one that will merit public approval."

The extent to which the Missouri Pacific has expanded its highway system during the past eight months is indicated on the map which is reproduced herewith.


CHICAGO
SALT LAKE CITY
MO. PAC.
TOPOLOBAMPO
GULF OF CALIFORNIA
G U L F O F M E X I C O
MISSOURI PACIFIC LINES
MISSOURI PACIFIC TRANSPORTATION CO.
MOTOR COACH SERVICE
WHERE MISSOURI PACIFIC LINES AND MOTOR COACH SERVICE PARALLEL

How the Missouri Pacific Motor Coach Lines Supplement Its Rail Lines

The Problems of Buying Motor Coach Lines

Some observations concerning a matter with which a great many railways are now deeply involved

By A Railway Officer

[*This discussion of the questions and considerations involved when a railway sets out to buy an independent motor coach line operating in its territory is, to be the best of our knowledge, the first of its kind ever published. Many railways are finding that if they are to be able to fulfill their desire to operate motor coaches supplementary to their trains, they must deal, with a view to purchase, with the operators already doing business on the highway routes the railway wishes to use. Dealing as it does with a problem of great interest at this time, it is felt that this discussion will be of considerable value to many of our readers. The author, who is a well-known railway officer, has requested, for obvious reasons, that his name be withheld.* —*The* EDITOR.]

WHEN the board of directors of one railroad desire to acquire control of another road, they usually do so by gradual purchase of the stock through their bankers or brokers so that the purchase can be accomplished without speculative inflation of the stock. The public generally, and the stockholders themselves, know nothing about the transaction until control is secured, and they read about it in the newspapers or financial periodicals.

Not so fortunate is the railroad which desires to supplement its rail service with motor coach lines, for practically all improved highways are occupied by independent motor coach lines holding exclusive certificates of public convenience and necessity. With few exceptions, the owners are individuals, partnerships or corporations with a very few stockholders, and any attempt to purchase their interests will necessarily bring all of the owners together, and the usual result is a local "Bull Market."

Prior to the time when the railroads began to interest themselves in motor coach operations, these lines were sold back and forth between independent operators at figures which took into little or no account the value of the franchises, and in many cases, with due regard on the part of the seller only to the salvage value.

The "Bull Market" in Certificates

Unusual activity on the part of the railroads in the past two years in acquiring these lines, and the knowledge on the part of the operators that the railroads had at last come to believe that there is a profit, either directly or indirectly, in supplementing their service along the highways, has established a market for these properties and a value for the franchises themselves which did not previously exist.

Independent operators have also been quick to see that the placing of highway operations under the control of state public service commissions has strengthened their position. Their properties are gradually developing from a large group of poorly-equipped, competitors of the rail lines to a lesser number, well organized and better equipped, and they can coordinate their schedules and secure through traffic as well as local passenger traffic along the railroads.

With this situation confronting him, the railroad officer who would develop a supplemental service on the other side of the right-of-way fence has no easy task when planning his campaign to acquire the necessary rights to do so. This new theory of public regulation of motor coach lines in intrastate service, with certificates of public convenience and necessity, has forced the railroads into a position of having to trade with the operator already established.

It is true that the railway is free to engage in interstate service merely by agreeing to be governed by state highway rules and by paying state taxes, and in a great many cases they can in this manner compete on fairly equal terms with the established operators. Furthermore, there are still a few states where there is no form of regulation, and anyone so minded can start an intrastate service; but in states where there is regulation, and these constitute the majority, the established operators are usually citizens of good standing in the local communities, and local sentiment does not favor the establishment of service competitive with them.

Furthermore, revenues from highway transportation have not yet reached the point where two or more operators on the same route can ordinarily make a profit; and unless all of the local rights can be secured, there is not much inducement to inaugurate competitive service of a purely interstate character, and particularly so if the plan contemplates a reduction in the local train service and the railroad is confronted with the possibility of having the right to do only interstate business.

Few Statistics Available

The solution of the problem in the end usually resolves itself into the purchase of the rights of the local operator. There is then the less simple problem of how to acquire them at a reasonable price. Among the first things the railroad official does is to look for statistics to determine what constitutes a reasonable price, and immediately he finds very little background for determining the value of a motor coach line. If he makes indirect inquiries of the owners for a price, they immediately become suspicious because they cannot locate the prospective purchaser. And if he sends another coach operator, he usually comes back without information, because very few men of this type have the financial resources to buy an established business, and the owner, knowing this, is again suspicious.

The railroad man may perhaps find some statistics in the files of the public service commissions, or in the reports to the state tax departments in those states where there is a gross revenue tax, which will give him a reasonably accurate picture of the revenues which

may be expected. And he knows from other general investigations that the cost of operating a motor coach ranges from 18 cents to 30 cents a mile, depending upon the size of the equipment, road conditions and the cost of the material and supplies required. After that, he soon falls back on the "horse trading instinct" of his ancestors, puts on a bold front, and goes to the owner and makes the best trade possible with him.

No Assurance of Permanency

An investigation of the prices paid by railroads in various sections of the country discloses many varieties of opinion as to what constitutes a fair price. It is safe to say that no industry which has been established for only four or five years, and the future of which is not yet assured, can be purchased upon a basis of permanency. Already, airplanes are making inroads on both rail and motor coach travel, and with the continual decrease in the cost of operating air lines, those who are in the transportation business see a real menace to their revenues from this source. State commissions and the public generally are still clamoring for increased taxes for the use of the highways, and a continually increasing burden is being placed on motor coach lines from these sources. Taxes on this form of transportation are now claimed to be 25 times the taxes paid for private automobiles. This has created a feeling on the part of prospective purchasers that they should be able to earn the purchase price of a line in three or four years' time, either through direct profits from the operation or through savings in rail operations where a substitution of one service for the other can be effected.

The value of a line may again be considered on the basis of the physical inventory of the property, plus an amount for the franchises and goodwill. The courts in valuation cases have not made much allowance for value of either franchises or goodwill in approving purchases of public utilities or in determining a fair basis of rates; but regardless of this, the owner of a motor transportation certificate knows that his route can only be duplicated at great expense, and that consequently such an intangible value exists. And he knows that the purchaser realizes there is no other means of establishing a service than through the acquisition of his rights.

Reviewing the sales of a considerable mileage, it is found that the prices paid for these certificates and the goodwill have varied from $5 per route mile to as much as $300 to $400 per route mile, the former where no operations had been commenced but a certificate had been secured, and the latter in thickly congested territory where operations showed a considerable profit. Where operations showed profits, indicating a possibility of paying the property out in three to five years' time, an average price per mile for certificates would be from $150 to $200 per route mile.

There is a feeling among some of our courts that railroads should be granted certificates of convenience and necessity to operate on highways paralleling their rail lines where they desire to substitute this class of service for rail service. This is evidenced by important cases in West Virginia, California and some other states. If this theory is correct and is supported by our higher courts, the problem of supplementing rail service on already occupied highways may be somewhat simplified, but until such a principle has been laid down, the establishment of other than interstate service can apparently be consummated by the railroads only through the time-honored method of "horse trading" with the owners of these certificates.

Profit in Motor Coach Operation

Many roads still refuse to believe in highway transportation in spite of the loss of a third or more of their passenger business to the motor coach lines and private automobiles. But many progressive railroads are giving up the battle against the apparently inevitable loss of short-haul rail business and are proceeding on the theory that if the public desires to travel on the highways the railroads should provide this form of transportation service. Whether such service can be rendered at a profit is still subject to much difference of opinion.

Suffice it to say, when railroads such as the Missouri Pacific, the Great Northern, the Southern Pacific, the Burlington, the New Haven, the Pennsylvania and others go into the business, there must be a real foundation for the belief that, directly or indirectly, automotive transportation can be made profitable.

* * * *

Interior Views of New Lang All-Metal Motor Coach Body, Showing Toilet Facilities

A Study of Co-operative Trucking

Advantages of employing trucking companies versus the railroad owning and operating motor trucks

By T. A. Johnson
Electrical Engineer, Central of Georgia, Savannah, Ga.

MANY railroads are confronted with the problem of the loss of l. c. l. freight to independent trucking companies. A personal study of the problem has shown that some of the shipments handled by independent trucking companies could be best handled by rail, especially those which could be consolidated into car-load lots. Other shipments can be handled more economically and to better advantage by motor truck. There are, however, many shippers who have become "motor-truck minded". The advantages of door-to-door delivery have a distinct appeal that is difficult for the railroad to overcome. Only a few shippers, usually the larger companies, employ traffic experts to route shipments. As a rule the small shipper gives his business to the traffic solicitor who sees him first, and frequently business of this character is awarded on a basis of personal friendship. These factors, of course, place the railroads at somewhat of a disadvantage with respect to competing with motor trucking companies.

All of the factors entering into motor-truck competition, mentioned in the preceding paragraph, as well as many others, have been discussed at various times and in considerable detail in the columns of the *Railway Age*. However, it is well to emphasize that the conditions described exist in the southeast, as well as in other sections of the country, and that they were the primary reasons for the writer making the study, the conclusions of which are given in this article.

Advantages of Contracting with Trucking Companies

Contracting with motor trucking companies for handling freight saves duplicating equipment. The independent operator can use his equipment for making city deliveries without the railroad assuming any responsibility. The additional business to the independent operator increases the volume, keeps his equipment employed and permits him to handle the railroad's business at a profit and yet at a figure lower than the actual cost of handling by the railroad. It minimizes the amount of money invested in extra-equipment, thereby cutting down overhead. As a rule, trucking companies have equipment of various capacities and can utilize it to advantage. In other words, it would not be necessary to send out a four-ton truck for a one-ton movement.

Trucking companies can act as traffic solicitors for the railroad company. Knowing that the more business the railroad secures, the more they will handle, they will

do the soliciting at no expense to the railroad. On the other hand, if the railroad company enters the trucking field where there are already established trucking lines in competition, it is natural that the trucking companies will become business rivals instead of friends and work to the disadvantage of the railroad company.

Contracting with the trucking company for a period of one year only, renewing at the end of each 12 months, gives the railroad company an opportunity to check up the trucking companies, and adjust the rates for handling freight on an equitable basis that should be to the mutual advantage of both companies. The short tenure of contract places the railroad company in an advantageous position to control the situation from practically all angles, including the quality of the service, loyalty to the railroad company, etc.

Stabilizes Business for the Trucking Companies

A representative of one of the large railroads, who is familiar with motor trucking operation, states that it is easy to control trucking companies because the additional business that the railroad gives them is looked upon as the source of their net profit. Trucking companies are anxious to hold railroad business as it is more stable and does not vary like the ordinary business picked up around cities.

The trucking companies already have organizations that are familiar with handling freight by this method of transportation and it would not be necessary to build up an organization with its consequent overhead expense. One representative of a railroad, co-operating with the division officers, can arrange and pass on all contracts, and a check can be kept in the accounting department of the tonnage handled and money paid trucking companies without much additional work.

If the railroads should purchase equipment and then desire to discontinue trucking, they would be left with equipment on their hands to use or dispose of at a loss. On the other hand, they have nothing to lose if the work is being done by outside companies.

One Class I railroad in the east advised the writer that, when it first started contracting with trucking companies for handling freight business, a great many of the trucking companies had equipment that was uneconomical to use in such service. Motor manufacturers, on account of the short term contracts, did not like the idea of extending credit to them. But, after it was explained to the motor manufacturers that it was the intention of the railroad company to retain in their service companies that proved themselves worthy, by extending the contracts over 12 months, the motor manufacturers were very liberal in extending credits. In many cases, new modern equipment enabled them to handle the business at a reduced expense and in the end, the railroad was the beneficiary of the economies brought about by the use of this improved equipment.

From the results of this study, it is the writer's recommendation that before any truck equipment is purchased for handling freight in pick-up service or otherwise (except in the terminals where the railroad has trucking organizations) that contracting with established trucking companies be considered first.

Experience of Some Railroads with Contract Trucking

It has been the experience of some railroads that it is not good policy to guarantee a trucking concern a minimum for a day's work for a piece of equipment. It is better to contract with them strictly on a tonnage basis, raising or lowering the rate to suit conditions. One railroad representative advised the writer that his road would rather contract with a number of small companies to handle its business than to let one company spread out over the system. They considered independent truckers in the same light that a banker does his depositors. They would rather have a number of small depositors than one large depositor, because they look upon all of these trucking companies as being solicitors, and the more the better.

An Example

There are certain short cuts in handling freight that trucking companies can make that would be an excellent policy for a railroad to follow. For instance, a trucking concern is trucking from station *A* to station *B*. Freight originating from a shipper at station *A* can be picked up by the independent trucking company, carried to the freight station of the railroad at *A* at his regular drayage charge and, without unloading it into the freight house, the agent can bill it to *B*. The trucker can then haul the consignment to station *B*. If he has a contract at that station with the consignee for city delivery, he can deliver the freight without its being handled at either freight house, and the railroad company collects the regular tariff.

The question might arise here: "Why does not the trucking company take this freight right on from shipper to consignee?" The answer is that, by consolidating the freight that the trucker is already handling with that which the railroad is handling, it gives him a larger volume of business. When he goes to the freight house with a package, instead of unloading it there, he can load his truck with freight that the railroad has on hand and take it to station *B*. If the trucker depended on what he could solicit, he would run his equipment half loaded one way and perhaps with nothing the other. It is in such cases as this that independent trucking companies can legitimately help to reduce the operating expenses of handling freight in a way which it would not be good policy for a railroad to attempt.

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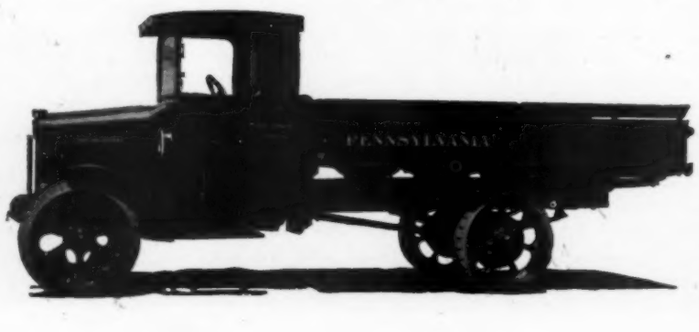
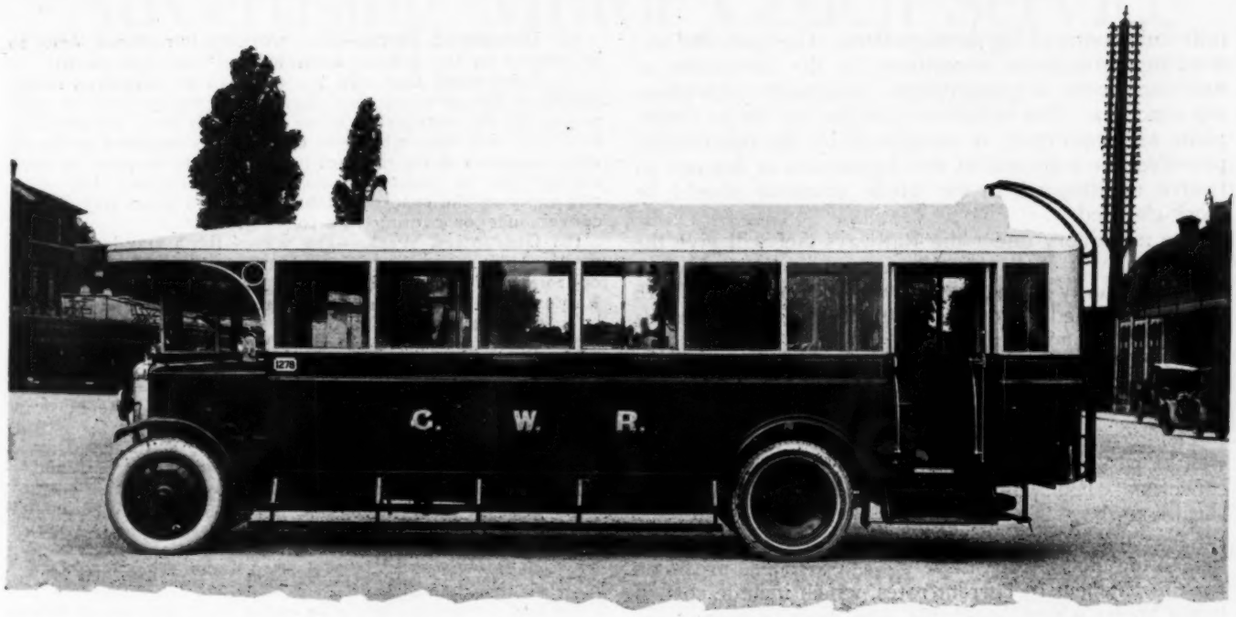


An International Harvester Truck in the Stores Department, P. R. R.



One of the Motor Coaches Operated by the Great Western of Great Britain

British Roads Enter Agreement with Highway Employees

Pact between companies and union deals with rates of pay and working conditions

By Alfred W. Arthurton
British Railway Companies' Association

THE absence of any central or national provision of negotiating machinery regarding wages and conditions of service in the road transport industry owing to the large number of small and competing proprietors of motor vehicles throughout the country has been criticised as inimical to the efficiency of the service and the safety of the public. Railwaymen have felt that, while their own wages and conditions are secured by national agreements, road transport drivers and others are compelled to work longer hours at lower rates of pay and by this means road transport is frequently able to undercut the railways by the employment of cheap labor, and abstract much of their traffic from them, thereby indirectly affecting railway employment. They contend that these circumstances were not good for any section of the community. It was not good for the traveling public because it permitted conditions which involved many dangers for both the pedestrian and the passenger, nor was it to the advantage of those employed in road transport to be constrained to accept unfavorable conditions and remuneration.

Railway trade unions strongly supported the railway applications to Parliament for powers to operate on the highways. Upon those powers being granted the question was raised by the National Union of Railwaymen as to the conditions of service of those men who would be employed in road transport duties. It is commonly believed that, as the railway agreements with municipal authorities and with existing road transport undertakings extend, the number of road transport workers thus brought within the scope of railway conditions of employment will substantially increase. One of the main clauses of the new agreement provides that all employees affected by the agreement are to be brought within the Scheme of Negotiating Machinery agreed in accordance with the Railways Act, 1921. It is an interesting illustration of the manner in which legislation, in the efforts it made to supply representative bargaining for the employers and workers affected, has unexpectedly entered a much wider field.

The negotiations between the companies and the National Union of Railwaymen were conducted in a friendly spirit and virtual agreement was soon reached on the main points at issue.

The new road services are in an early stage and as yet it is not possible clearly to define the lines upon which they will be ultimately developed. The immediate policy of the companies is to secure advantage of the powers conferred by Parliament and there are def-

inite indications of big developments. Co-operation and working agreements, sometimes by the formation of new companies, is preferred to competition with existing concerns. The indefinite position, so far as future plans are concerned, is recognized by the opportunity provided for a review of the Agreement at the end of twelve months, when the whole situation should be more clarified.

The machinery under the Railways Act will give the men employed in the road transport section of work the opportunity of having their conditions dealt with through the medium of the Sectional Railway Councils and Central and National Wages Boards and, as the services develop men engaged therein will have a channel of approach through the Local Departmental Committees.

The agreement covers men engaged on freight as well as passenger vehicles in so far as rates of pay are concerned. Examination of the schedule will show that rural rates have been agreed for all the grades specified, the principle having previously been determined in relation to the motor truck drivers. There is also provision for the payment of current rates, which include cost of living bonus where applicable, and these in some cases are slightly higher than the basic rates. The current rates will be subject to the provisions of the sliding scale arrangements.

The conditions of service, as apart from rates of pay as set out in the agreement, do not apply to those engaged in the performance of ordinary goods or parcel collection or delivery services within recognized goods or passenger station cartage areas.

The text of the agreement follows:

I. Rates of Pay

On and after the date of operation of this Agreement the following rates of pay to apply to all adults entering any of the grades mentioned whether or not engaged in the performance of such goods or parcels collection or delivery duties as are usually undertaken by goods or passenger station cartage staff in Town areas:—

Grades	London.		Industrial Areas.		Rural Areas.	
	Current.	Standard.	Current.	Standard.	Current.	Standard.
	s.	s.	s.	s.	s.	s.
* Motor 'Bus Driver—Leading						
Class 1..	74	74	71	71	67	67
" " " Class 2..	68	68	65	65	61	61
Motor 'Bus Driver (Public).....	64	64	62	62	58	58
Motor 'Bus Driver (Private).....	60	60	58	58	54	54
Motor Parcel Vanman (Petrol and Steam)	60	60	57	57	53	53
Goods Motor Driver (Petrol and Steam)	60	60	57	57	53	53
Goods Motor Driver (Electric)...	56	56	54	53	50	49
Motor Parcel Vanman (Electric)..	56	56	54	53	50	49
Motor 'Bus Conductor.....	58	58	54	54	50	50

* Note.—Men who are responsible for the supervision of motor drivers at a small depot, including running repairs, stores and discipline.
Class 1. (Where weekly depot mileage is above 1,000 per week.)
Class 2. (Where weekly depot mileage is 1,000 or below per week.)

II. Conditions of Service

To be applicable to men in the grades mentioned in Clause I, other than those engaged in the performance of ordinary goods or parcels collection or delivery services within recognised goods or passenger station cartage areas.

(1) **Negotiating Machinery.**—All employees affected by this Agreement to be brought within the Scheme of Negotiating Machinery agreed in accordance with the Railways Act, 1921.

(2) **Hours of Work and Meal Times.**—The standard hours of work to be 48 per week, exclusive of mealtimes, the 48 hours to be worked usually in six turns rostered as the Company may require, and providing for either one or two meal intervals to be taken at reasonable times convenient to the service. Where necessary, the 48 hours may be worked in less than six turns, provided that the duration of each turn, inclusive of meal intervals, shall not exceed 12 hours.

(3) **Spread-over Arrangements.**—Spread-over turns of duty to be worked as and when required.

(4) **Unrostered Turns.**—Men working unrostered turns to be subject to the general conditions of this Agreement.

(5) **Guaranteed Day.**—In the event of an employee being available for duty on any day, such employee to be paid wages for the number of hours for which he is rostered for duty. In any case where an employee is required to be on duty in excess of his rostered hours, he is to be paid for such excess time at overtime rate. The Guaranteed Day does not apply in the case of a man working a short day for his convenience or coming late to duty.

(6) **Guaranteed Week.**—The wages for a standard week's work of 48 hours, inclusive of payments for rostered duty on Sundays, also on Christmas Day and Good Friday in England and Wales, and on January 1st and 2nd in Scotland, calculated at ordinary rate, but exclusive of any payments for overtime, to be guaranteed to employees who are available for duty throughout the week.

(7) **Overtime.**—All time worked in excess of the rostered hours on any week-day to be paid for at the rate of time-and-a-quarter.

(8) **Duty on Sundays, Good Friday and Christmas Day in England and Wales, and January 1st and 2nd in Scotland.**—For all duty performed on Sundays, also on Christmas day and Good Friday in England and Wales, and on January 1st and 2nd in Scotland, payment to be at the inclusive rate of time-and-a-half, subject to the following minima:—

For one or two turns—2 hours at time-and-a-half for each turn.
For three turns of duty—8 hours at ordinary rate, plus half ordinary rate for time actually worked.
The rate of time-and-a-half to be applied to all time worked between midnight and midnight on the above specified days.

(9) **Lodging Allowances.**—(i) *When notified of double home turn before leaving place of residence.*—The allowance to be 1½d. per hour, or portion thereof, for the whole of the time from booking on duty at the home station to booking off duty at the home station. Minimum 3s. 6d. Where the company provide lodging accommodation, a reduction of 1s. per day or night to be made.

(ii) *Men booked off to take a second rest.*—After being once booked off, a man is to be worked back to his own station, but if in unforeseen circumstances, it is necessary to book a man off again, the allowance is to be at the rate of 2d. per hour from the time of signing off duty for the second rest to signing off duty at the home station. Where the company provide lodging accommodation, a reduction of 1s. per day or night to be made.

(iii) *When not notified of double home turn before leaving place of residence.*—The allowance to be 2d. per hour, or portion thereof, for the whole of the time from booking on duty at the home station to booking off duty at the home station. Minimum 4s. Where the company provide lodging accommodation, a reduction of 1s. per day or night to be made.

(iv) *Allowance for food provided but not required.*—In the case of a man ordered to work a double home turn, who packs food accordingly but is advised after leaving his home that he will not be required to take rest away from home the sum of 1s. 6d. is to be allowed.

(v) *Men temporarily transferred from home station to another station.*—Lodging allowances for men temporarily transferred from their home station to another station to be 3s. 6d. per day and night. Where the company provide lodging accommodation a reduction of 1s. per day or night to be made.

(10) **Piece-work, Tonnage or Bonus working.**—All new rates or revisions of piece-work, bonus and tonnage working to be agreed between the Railway Companies and the men concerned.

(11) **Higher Duty Pay.**—A man temporarily filling the post of a man in a higher grade or higher class of a grade to be paid as follows:—

If he works four hours or less per day in the higher grade, he is to be paid for the full turn of duty a mean between his lower rate of pay and the minimum of the higher grade he follows. If he works more than four hours per day in the higher grade, he is to be paid the minimum wage of the higher grade for the full turn of duty.

(12) **Annual Leave.**—One week's holidays—6 weekdays with pay—to be given to all employees after twelve months' service.

(13) **Emergency or Special Duty.**—Men called out for emergency or special duty outside their rostered turn of duty to be paid at the appropriate overtime rate with a minimum payment as for two hours at such rate.

(14) **Rest.**—Rosters shall provide a period of not less than nine hours rest from the time of signing off to signing on for the next turn of duty.

III. Date of Application of Agreement

This Agreement is to come into operation on April 15, 1929, and to be subject to review, if necessary, at the end of twelve months.

Advertising Motor Coach Service

How the Great Lakes Stages and the Greyhound Lines develop traffic through the use of the printed word

TWO papers describing motor coach service advertising methods were an interesting feature of the meeting of the National Motor Bus Division, American Automobile Association, in Buffalo, N. Y., on July 1. One of these, presented by Paul K. Wadsworth, general manager of Great Lakes Stages, analyzes advertising efforts designed to develop short-haul traffic. The other, by John B. Walker, of the Greyhound Lines, tells how this well-known company, which recently became affiliated with the Pennsylvania, promotes its long-haul business.

Abstracts of the two papers follow:

Advertising Suburban or Short Haul Service

By Paul K. Wadsworth

General Manager, Great Lakes Stages

There are two types of short haul, suburban, inter-city lines. One is a route travelling through several small communities into a large community; the other is a route between two large cities 40 or 50 miles apart, or less. Our operation is from several small cities to a large city, and the advertising done on this type of route is entirely different from that which should be done on a route between two large cities.

We do not set aside a percentage of our revenue, but instead we set aside one cent per mile for the purpose of advertising in newspapers, printing schedules and in placing schedules in local consolidated time tables.

Contrary to what we have found to be good practice on our long haul service, we find that newspapers are not the best medium for advertising on short haul service. Our principal customers—by this I mean 90 per cent of our customers—are the people who live on our lines. We could not afford to run complete time schedules in enough newspapers to bring about a good distribution among these people. We therefore do not advertise time schedules in newspapers for local service; on the other hand, we do advertise short haul service in the newspapers by trying to bring to the attention of the people the difference in cost between driving one's own car, which government statistics say is from 8 cents to 12 cents per mile, and travelling via motor coach at a maximum cost of 3 cents per mile; the fact that there is frequent service; that the service is dependable; that bad weather makes no difference in the schedules; that the coach stops anywhere; that it is convenient; that there is no parking expense; that the coaches are warm in winter and cool in summer; that they are comfortable; that the drivers are carefully trained, and that they travel over the same road day in and day out; that passengers will not become exhausted because of some tilt with another automobile driver; and that they arrive at their destinations in complete relaxation. We also advance many other reasons why the motor coach should be their means of transportation instead of their own cars, which we find are our biggest competitors.

About 60 per cent of our money is spent on various forms of time tables, and their distribution; the other 40 per cent is divided between advertising in association schedules, which are purely local, and good will advertising in newspapers. I might also mention that our newspaper advertising is divided in this way: about 50 per cent in large cities and 50 per cent in small ones.

Most of our newspaper advertising is done during the months of November, December, January, February, March, April and May, which are the slow seasons for our business, particularly January, February and March. In the summer our business is at its peak, due to the opening of summer resorts and the general moving from the city into the country of a large number of people.

In the summer we do not do any advertising, unless there is a change of schedules, at which time we make an announcement of the change in the papers, and ask our patrons to get copies of our new time table.

We distribute each month about 15,000 folders of the small pocket folder type, which are purely local time schedules and show the leaving time of our coaches from various cities. Half of these are distributed by our drivers and conductors, and the other half are distributed by house-to-house canvass, taking different sections of the line each month.

We find that advertising in local consolidated schedules helps us get the travelling men. We also place our schedules in the hands of the porters of the various hotels along our route, and at information booths that any of the cities may have, as well as those of the chambers of commerce in the various cities.

We have also found that advertising does not only mean printed matter, and that the best advertising we have is our equipment. This is possibly the most effective advertising known to us. We attempt to keep our coaches washed and clean and the paint in good condition at all times, thus making a good impression upon the people living on our route.

We insist upon our drivers being courteous to everybody, as we feel that courtesy to the automobile owner makes friends for us and eventually passengers. This particular advertising expense, of course, is not figured on our books as advertising, but I feel that this particular item is probably the most powerful advertising that we have. My advice to operators of short haul and inter-city lines would be to distribute as many schedules as possible to people living along their lines, to advertise in local consolidated time schedules and to advertise occasionally motor coach transportation in general, in newspapers of general circulation throughout the section in which they operate.

We do less advertising in the summer when our business is at its peak, and as the business declines we do more advertising, for there is a point beyond which increased business means a loss of profit due to the necessity of dead-heading coaches for double-headers.

If we were operating a large city-to-city service on short hauls, we would attempt to develop the city-to-city business rather than a large city to a small town business, which would result in a large percentage of passengers for short rides, leaving empty seats on the balance of the trip. Of course, some provision has to

Some Samples of Motor Coach Line Newspaper Advertisements

be made for the local rider between two large cities, but no campaign should be made to develop this short haul business to any considerable extent except between the large cities, themselves, as this will leave vacant seats in the coaches en route.

A city-to-city service demands more newspaper campaigns, together with placards, rather than the distribution of schedules, although some distribution must be made. However, the percentage of newspaper advertising should be approximately 60 per cent, with 40 per cent taking care of time schedules and local consolidated schedules. The newspaper advertising should stress time schedules and service.

I have also found that in different localities, different types of advertising are needed. In some localities the price seems to be the biggest factor, while in other localities the kind of equipment used and the service in general seem to be more important.

It is difficult to determine just what should be done in the way of advertising without making a few experiments and keeping an accurate record of the results. It is true, however, that the general appearance of the equipment is a big asset, whether in the operation from several small towns to a big town or from one large city to another, and I feel that money spent for the general appearance of the coach will bring more value per dollar than any other kind of advertising.

Advertising the Long Haul Operation

By J. B. Walker
Public Relations Dept., Greyhound Lines

The advertising problems confronting the long haul motor coach operator are two-fold: educational and revenue promotion. The short haul operation has been so well established that it is accepted by the public on practically the same basis as interurban rail service. Not so with the long haul. There are countless thousands of people to whom the story of a transcontinental motor coach system, or one of much less than that distance, is still news; and even to those who know of the existence of such a service, there are many questions which they have to ask, and on which they must be satisfied before they will embark on a motor coach journey of 1,000 miles or more.

What type or types of advertising can best answer these queries, overcome the inertia and resistance of the public, and presell the idea of the long haul motor coach journey? How much will it cost? Where and when should it be used? These questions face the long haul operator who would increase his revenue through advertising. Let us attempt to answer them in order:

First, as to the kind of advertising: As previously stated, this should be a combination of educational advertising and of straight selling "copy." From the educational standpoint, the public should be told of the scenic beauties of the route, the advantages of travel that covers the highways and boulevards, rather than the freight yards and back alleys. They should be told of the safety and comfort of the equipment; the responsibility of the company and its employes, especially drivers, should be stressed. For this educational advertising, national magazines are the best medium, but to the majority of operators they represent too great an expense and too much of their circulation is wasted, due to the fact that it is off the routes covered. The next best medium for this purpose is the rotogravure section of the metropolitan Sunday newspapers. These are read by every one, and provide adequate circulation coverage over a fairly wide territory in addition to the particular metropolis served.

Black and white newspaper space, while not suited to educational advertising, except where used in large space units, is ideal as a medium for straight revenue promotion advertising. The experience of practically all of the long haul operations has proved that nothing equals daily newspaper advertising as a means of revenue promotion over extended operations. Such space should be devoted almost entirely to straight "selling copy"; this to consist primarily of the listing of schedules, stops, etc.

Second, on our list of questions referred to above, is cost. Most operators figure costs of all kinds on a per mile basis. This procedure is incorrect as applied to the budgeting of advertising. The advertising appropriation should bear a definite percentage ratio to *expected revenue*. The average advertising expenditure of American railroads is around three per cent of their gross passenger revenue. This percentage is a bit high for the average motor coach operation, especially at this stage of the industry's development, when cost items are not as well stabilized as in the case of rail operations. A figure of 2½ per cent of *expected* gross passenger revenue is more nearly correct.

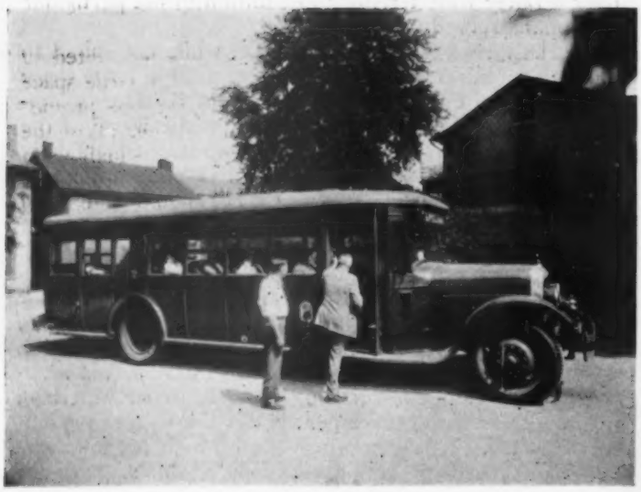
The advertising appropriation should be divided roughly as follows: Newspaper advertising (educational and revenue promotion), 60 per cent; time tables or schedules, 20 per cent; special literature, signs, etc., 20 per cent.

The next problem is that of scheduling the advertising. By this is meant the selection of seasons, days, etc., on which it should appear. Experience has indicated that advertising in the summer months is most productive, due to the fact that public demand for all kinds of travel is at its peak during that season. On the other hand, extensive summer advertising can easily become a waste of money due to the fact that normal summer travel will produce capacity traffic without much advertising stimulation. It is better practice during the summer months to release advertising only at strategic points where revenue averages low, or where competitive conditions necessitate stimulation, and to reserve the bulk of the advertising appropriation for use in the low revenue periods during the winter. A revenue chart of most long haul operations will show decided peaks in the summer months, and some alarming valleys in the winter. The advertising appropriation should be regarded as a corps of "shock troops," which can be marshalled into action to bolster up the valleys in the revenue chart and, if possible, convert winter red figures into black.

As to the best days on which to advertize long haul motor coach transportation, the experience of most operators indicates that week-end travel is naturally heavier. Therefore, stimulation is needed during the earlier days of the week. Tuesday and Thursday seem to be the favored days for advertising of a selling nature; that is, the listing of schedules, destination and fares. Educational advertising, as stated before, finds its best outlet in Sunday metropolitan newspapers, with the rotogravure section as the favored medium.

Another very important factor in promoting long haul coach travel is publicity. Properly handled, a considerable volume of favorable press notices can be secured. This, being pure reading matter, is at least as valuable, as paid advertising space. Countless opportunities for securing such publicity present themselves in the course of a year. Schedule changes, the purchase of new equipment, acquisition or inauguration of new lines, changes in personnel, the safety activities of the company, etc., all make good news matter, which the majority of newspapers, especially in small towns, are glad to run.

The P. R. R. Motor



Pennsylvania General Transit Company Motor Coach at Lewisburg, Pa.

Sunbury, Pa., Enginehouse Converted into Garage

P. R. T. and Greyhound Motor Coaches at Broad Street Station, Philadelphia

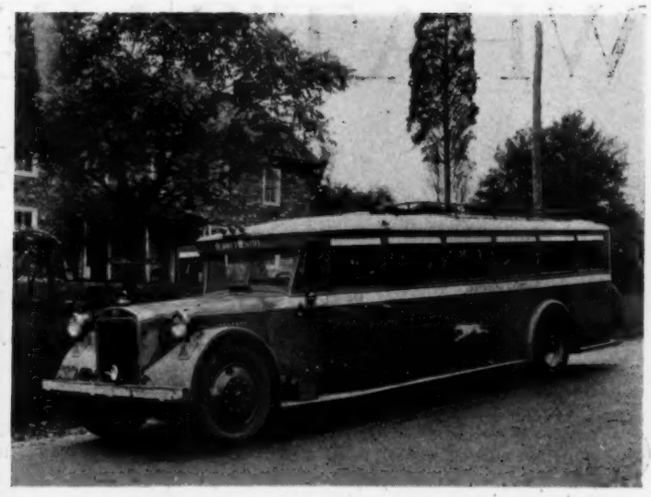
View of Greyhound-P. R. T. Philadelphia Garage

Greyhound and Yelloway Lines Motor Coach Terminal at Pittsburgh, Pa.

Inspection Pits at Philadelphia Garage

Coach Operations

Motor Coaches at New York Terminal



Lewistown-Sunbury, Pa., Motor Coach of Pennsylvania General Transit Company

Interior of Greyhound's Pittsburgh Terminal

Wilkes-Barre, Pa., Motor Coach Leaving Pennsylvania Station, Harrisburg, Pa.

The New Terminal at New York

Pennsylvania General Transit Coach at P. R. R. Shamokin, Pa., Station

WHAT'S NEW

In Motor Coach Design?

Equipment development committee of Bus Division, A. A. A., reports on recent developments of great interest

OUTSTANDING new features of motor coach design and construction were described in the report of the equipment development committee of the National Motor Bus Division, American Automobile Association, presented at the meeting of the division held in Buffalo, N. Y., on July 1. Following are portions of the report, which was read by Chester G. Moore, chairman of the committee.

Consider the "Nite Coach." Here is a complete vehicle which weighs only about 16,000 lbs. This is hardly more than many of the earlier types of motor coaches. With an overall length of 34 ft. 4 in., a 96-in. width and a 10-ft. 3-in. height, it has sleeping accommodations for 26 passengers. This radically new vehicle has conveniences heretofore associated only with de luxe rail and water travel. In addition to the sleeping quarters, there are also included dining, lavatory and drawing-room facilities.

Maintenance Features of "Nite Coach"

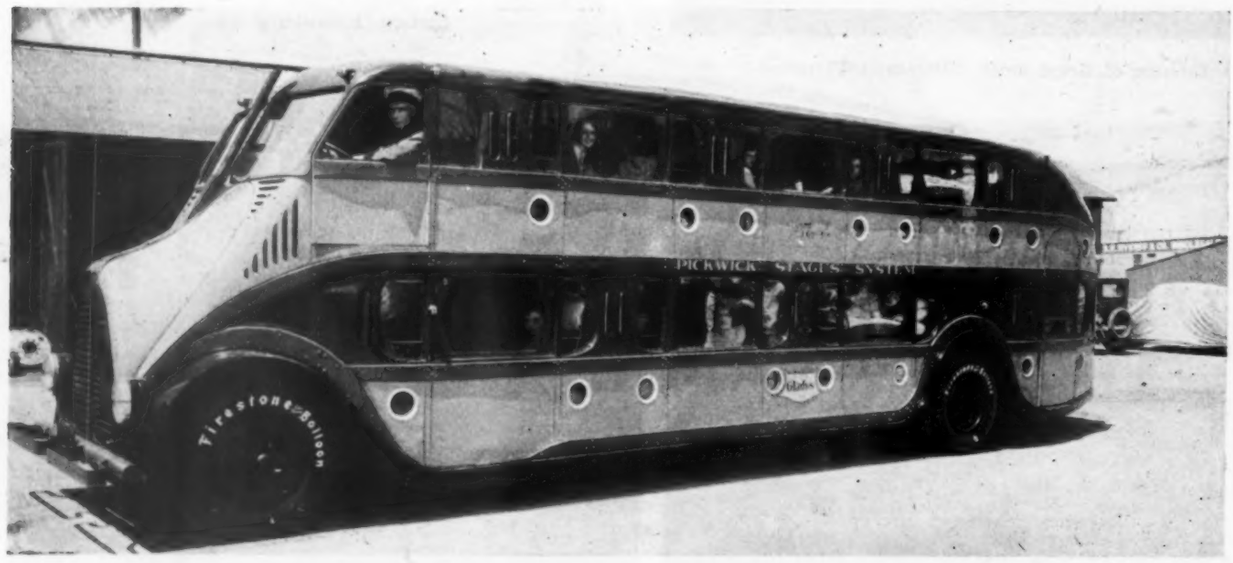
Another outstanding feature of this unit is the ease with which the more important operating members can be removed for maintenance. For example, the powerplant is so mounted that radiator engine, clutch, transmission, battery, instrument board and exhaust pipe can be replaced in less than 40 mins., merely by unfastening the hold-down bolts and sliding the complete unit out on rollers. This is in accordance with the plan to replace engines during rest or meal stops, if trouble should develop.

Another unit built along a somewhat similar principle, in that it is of frameless design, is the Twin coach. In this unit the body and so-called chassis members are of unit design.

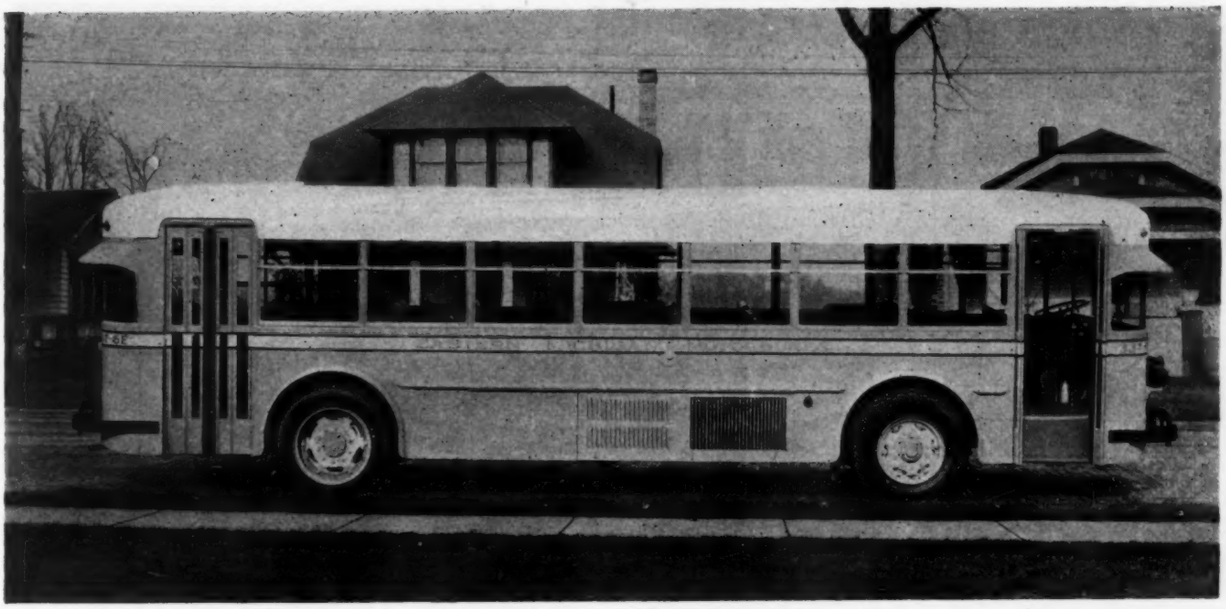
Multi-Wheel Vehicles

With the tendency toward increasing weight, undoubtedly more consideration will be given multi-wheel vehicles. The six-wheeler, although rather unsatisfactory in earlier designs, will undoubtedly play an important part in the future development of the heavy duty motor coach. Six-wheel systems can be made to ride better than conventional arrangements, and better tire mileages can be expected; but there is also another vital issue; namely, that with the six-wheel principle properly executed, so-called mass transportation equipment, whether used in urban or interurban service, can be designed with a relatively short wheelbase without excessive rear or front overhang. The importance of this cannot be over-emphasized.

It may not be reaching too far into the future to consider eight-wheel vehicles. A number of these designs have been worked out on paper, and although experimental models have not been built, there is reason to believe that this type of unit will receive the consideration it merits. In fact, at the present time the Bussing,



The Pickwick "Nite Coach"



Twin Coach Urban Model

a German development, and rather widely used in Berlin, is under consideration here.

Steam and Diesel Power

There are possibilities in steam propulsion. It is somewhat surprising that steam has not played a more prominent part in the motor coach industry. At first glance, steam is the ideal solution to the mature power problem, but little or no success has attended various developments which have appeared from time to time. Nearly all steam-propelled vehicles give spectacular performance; yet none of them has withstood the test of time and distance.

However, future developments along this line seem assured, with one company at present well along with what seems to be a rather sound design. The tremendous advantages of steam, such as maximum torque at zero speed and absolute silence, are qualities that are irresistibly attractive to the motor carrier.

The Diesel engine has received merited consideration for motor coach service, particularly in Europe. Undoubtedly it will not be long before these units will be used to a limited extent. However, one of the main disadvantages of this unit is the fact that, owing to the high compression ratios which must be maintained, the greatest care must be taken in the maintenance of the engine. While the Diesel's possibility of using fuel oil is attractive, there are certain disadvantages which must be overcome; namely, a tendency toward smoking, and noises in operation. Probably these will be ironed out as time progresses.

P. R. T. Fuel Oil Burning Coaches

While on the subject of oil burning, mention should be made of the use of an oil burning apparatus on the vehicles operated in Philadelphia under Mitten management. It is understood that this company plans to equip all of its vehicles with this device before the end of 1929. Among the advantages of the fuel burning attachment, which is known as the Godward gas generator, the following facts are claimed to have been established: First, a 29 per cent economy due to difference in fuel cost; second, a 5½ per cent economy in fuel consumption as compared to gasoline, and without changing the carburetor setting; third, a 15 per cent increase in the power output of the engine; fourth, a material reduction in the carbon monoxide content of the exhaust.

While on the subject of engines, mention should be made of a design which is at present in the first stages of development—the Lever motor. This unit employs a compound lever arrangement in place of the conventional connecting rod. A piston valve motor has recently been developed which, it is understood, affords approximately 25 per cent more power than the conventional valve engine and with but 60 per cent of the fuel consumption. Several of these units have been built for experimental purposes and, it is understood, have shown quite a bit of promise in dynamometer tests.

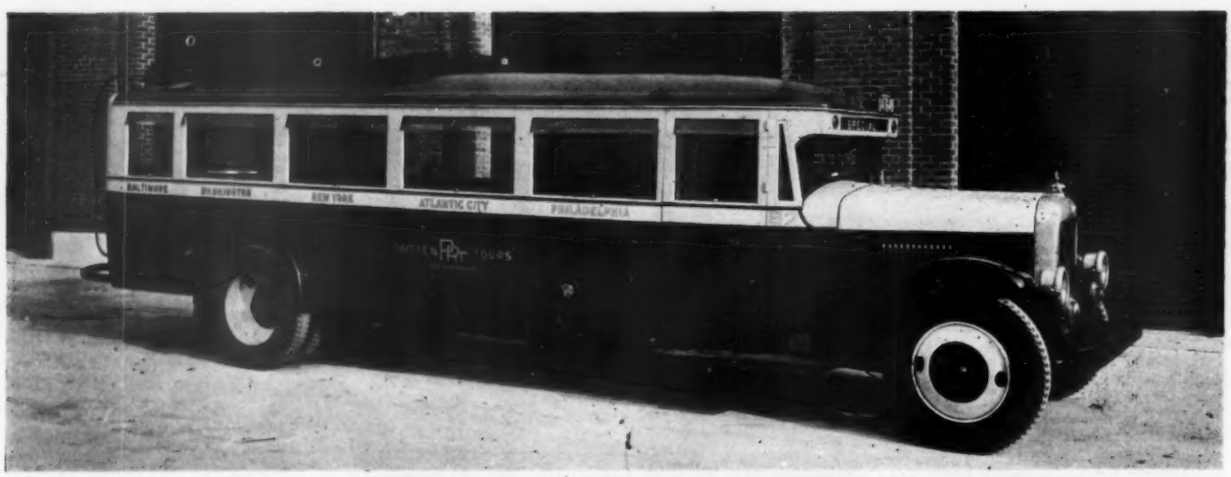
Larger, Heavier Engines Coming

Undoubtedly we are coming to larger and heavier engines. The Pickwick Company is now using a unit having a 5¼ in. bore and 7 in. stroke. This unit has a cubic displacement of approximately 927 cu. in., and with the low gear ratio used in the differential, operates at a very low engine speed at relatively high road speeds. For example, at 60 miles per hour, the r.p.m. is only slightly over 1400, while the piston foot travel per minute is less than 1650. This comparatively short piston travel, of course, materially simplifies lubrication of cylinder walls, while the low r.p.m. makes lubrication of moving parts simple and positive.

Mention, too, should be made of the improvement in engine bearing construction. Two models—the Yellow type Z and the White model 54 — are using a steel back bearing at the present time. Advantages claimed for this unit are longer life and less need for replacement due to damage. Another innovation in bearings is the so-called "Chocolate" bearing now installed in Hall-Scott engines. This bearing employs for its main element 70 per cent copper and 30 per cent lead. Its advantages are long life with freedom from scoring the crankshaft, even though the engine should be operated for a short time with no lubricant.

New Cooling Experiments

The Baltimore Coach Company, subsidiary of the United Railway & Electric Company, is at present ex-



A P. R. T. Motor Coach Equipped to Burn Fuel Oil

perimenting with a new engine cooling system which holds the promise of bringing about a decided improvement in the cooling of the internal combustion engine, and resulting in higher thermal efficiency, more reliable operation and reduced wear. In this system the latent heat of vaporization is quickly dissipated, the engine warms up quickly and maintains a high jacket temperature that reduces cylinder heat stress. The improvements which would be expected from a theoretical consideration of this system, actually have been attained under all operating conditions. The system itself employs nothing more than the triple principle of the old low-pressure steam power plant in which part of the liquid is vaporized when the engine heats up, and this steam is drawn into a condenser in the middle section of the radiator, where it gives up its heat more rapidly. This enormous dissipation is in addition to the regular loss of heat, as the temperature of the water is lowered so that the capacity of the liquid for giving off heat is greatly increased. The system cools effectively from 212 deg. to a safe high limit, a condition that is impossible with present conventional systems.

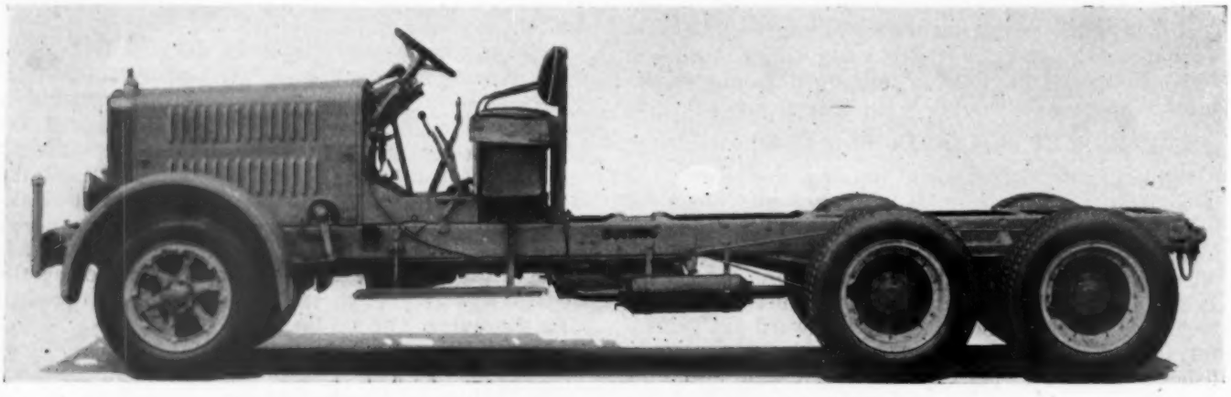
Changes in Body Design

With ever-increasing chassis weight, it is almost imperative that means should be taken to reduce, as much as possible and without impairing the safety factor, the body weight. Along this line we are turning to aluminum and various other light alloys in an attempt to find the answer to our problem. A rather interesting example of this is found in the development of a new seat which is 40 in. wide and weighs only 24 lb. complete with upholstery. This compares with weights of 105 lb. and more with the present type seats in use. The seat in question is a development of the Aluminum Company of America and originally was designed for aeroplane service. More consideration will be paid to the weight of flooring, frame members and even roof construction in a further effort to reduce the body weight.

Another important development in modern coach body design is the seats themselves. Whereas the reclining type chairs formerly were found only in de luxe models, they have now come to be regarded as a necessity, and units of this type are almost universally used in parlor type equipment. Foot rests, to increase the comfort of the passengers while en route are also an important consideration.

In the "Nite coach" design, Pickwick has developed a pneumatic cushion and mattress which promote easier riding and at the same time is materially lighter in weight. There is a possibility that this type of seat will be given even greater consideration as time progresses.

Before leaving the subject of body design, it seems to me that the principle employed in Pickwick "Nite coach" might be applied to small capacity coaches. Employing this principle, it is possible to put 24 passengers in a 14 foot body, as against the 19 or 21 ft. body required in the present conventional type vehicle. The possibilities of such a compact vehicle, particularly in crowded traffic centers, are alluring.



Büssing German Built Chassis Powered with a 100-Hp. Engine

The Total Annual Tax on the Average Motor Coach in 1929 Was Nearly Twice as Large as in 1924

The Trend of Motor Coach Taxes

Analysis shows 95 per cent increase during past five years—
Taxes take five per cent of gross income

By A. D. Ferguson
Assistant Engineer, Bureau of Economics, Canadian National

THE motor coach represents an outgrowth of the familiarity of the individual with the operation of motor vehicles, and of the construction of more mileage of better roads. When the motor coach came into existence, since any development such as has taken place in this field could not be anticipated, the taxes already imposed on motor vehicles were applied very generally to this new agency of transport. In addition, many states also imposed additional "special taxes" on the coach.

The Situation in 1924

In 1924, fifteen states imposed special fees in lieu of regular motor vehicle registration fees; 30 states taxed motor coaches on the same basis as private passenger automobiles, while 4 states imposed taxation on the same basis as on trucks. Of the 30 states which taxed motor coaches on the same basis as private automobiles in 1924, 26 charged exactly the same rates, 2 used double the rates, and 1 used one and a half times the rates applied to private automobiles, while only 1 state used an entirely different rate. Again, in 1924, 11 states did not impose any additional fees for motor coaches over those which would have been paid for a private passenger automobile of similar specifications.

By 1929, there has been little change, as we find that 18 states now impose special fees in lieu of regular license fees, 27 states assess motor coach fees on the same basis as for private passenger automobiles, while 4 still use the same basis as applied to private trucks on those states. Of the 27 states which assess motor coach registration fees on the same basis as private automobiles during 1929, 21 charge precisely the same rates, and 2 use double the rate applied to such vehicles, while only 1 state uses an entirely different rate.

In 1929, however, there are only 2 states which do not charge any additional fees for motor coaches over those that would be assessed for a private passenger automobile of similar specifications, and it may be said that one apparently definite trend in motor coach taxation in recent years has been towards the imposition of fees additional to those which would be paid on the

Common Carrier Motor Coach Taxation—U. S. A.

Tax Calculated in Each State for a Motor Coach as Follows: 20 Passenger; 9,000 lb. unladen weight; cost new $8,000; 30 Horse Power; Annual Mileage 50,000; Annual Gas Consumption 7,142 gals.; Gross Income $12,000 per annum

				Total Annual Taxation					
		Total of Taxes Paid in Each State	% Gross Income	Registration Fees	% Total Tax	Gasoline Tax	% Total Tax	Special Tax	% Total Tax
1924		14,032.42	2.4	1,382.15	9.85	4,892.27	34.86	7,758.00	55.29
	Average	286.37		28.21		99.84		158.32	
1925		15,038.40	2.6	1,489.65	9.90	5,642.18	37.52	7,906.57	52.58
	Average	306.91		30.40		115.15		161.36	
1926		18,671.38	3.2	1,513.40	8.10	8,713.24	46.67	8,444.74	45.23
	Average	381.05		30.89		177.82		172.34	
1927		23,061.59	3.9	1,435.40	6.22	8,677.53	37.63	12,948.66	56.15
	Average	470.64		29.29		177.09		264.26	
1928		26,021.14	4.4	1,653.40	6.35	10,855.84	41.72	13,511.90	51.93
	Average	531.04		33.74		221.55		275.75	
1929		27,432.29	4.6	1,663.90	6.06	12,319.99	44.91	13,448.40	49.03
	Average	559.84		33.95		251.43		274.46	

same basis and at the same rate by private passenger automobiles.

In an endeavor to ascertain whether the various methods used to impose taxation on common carrier coaches are tending towards any definite goal, the following analysis has been made of the annual taxation of such vehicles in the United States during the period 1924-1929. The data contained in the annual digests of the Motor Vehicle Conference Committee, entitled "Special Taxation of Motor Vehicles," form the basis of the calculations used in this analysis and the taxes imposed in the various states on common carrier coaches have been applied to a coach of the following description:

Seating Capacity	22
Weight	9,000 lb.
Horsepower	30
Value	$8,000
Gross Income	$12,000 per annum
Gas Consumption	7,142 gal. per annum
Coach Mileage	50,000 per annum
Passenger Miles	500,000 per annum

It must be carefully borne in mind that an analysis of this kind does not furnish any key to the actual amounts of the taxes paid annually by motor coaches, but it does reveal the relative importance of the amounts payable, as based on the various state laws.

For the purposes of this study, the taxes paid by common carrier motor coaches are divided very generally into three classes:

1. Registration Fees.
2. Gasoline Tax.
3. Special Taxes.

License fees for drivers are purposely omitted, as is any attempt to take cognizance of any property or other local tax.

Registration Fees

In the majority of states, special taxes on common carrier coaches are additional to regular registration fees. The primary object of this study is the consideration of the special additional taxes on motor coaches, and consequently the registration fees do not occupy a very prominent place, but are included merely as an indication of the total annual taxes paid.

There is a complete lack of uniformity in registration fees. During 1928, the fee for such a motor coach was $53 in the state of Kansas, while in the adjacent state of Oklahoma the similar fee was $125. Study of the relationship which the amount paid in annual registration fees bears to the total annual tax reveals that, whereas in 1924 the average registration fee for the specified motor coach represented approximately 10 per cent of the total annual average tax, in 1929 such fee represents only 6 per cent of the total annual payment. The "average" registration fee is found by dividing the total, obtained by adding together the amount of the registration fee in each state, by the number of states. There has been only a small increase in the amount of the average registration fee during the past six years. In 1924 the average fee was $28.21, while by 1929 it has increased to $33.95.

Gasoline Tax

The tax on gasoline is proving easy of collection, and much-needed revenues are being derived from this source. There is undoubtedly a certain measure of fairness in such a tax, in that the amount of gasoline consumed by a vehicle travelling over the highway does represent, to some degree, the "use" made of the facilities provided for such vehicle. In addition, there is the further advantage of making visitors or tourists contribute a certain amount toward the maintenance of local roads which they use during their travels.

A certain measure of unfairness does exist, however, in that the gasoline consumption for a given mileage is generally greater on lower type roads than on those of higher type, and consequently the motor vehicle owner who has to use the poorer roads pays a higher tax than the user of the better roads.

In 1924, 35 states imposed a gasoline tax; but the tax was 2 cents per gallon or less in 26 of these states. In 1929, all of the states and the District of Columbia are imposing a tax on gasoline; but in only 9 instances is the tax 2 cents per gallon or less. During this period, the general trend in the tax on gasoline has been upward, apparently tending towards a maximum upper limit of 5 cents per gallon. Further study of the gasoline tax reveals that the more wealthy states were the last to impose such a tax, thereby indicating that the tax on gasoline was only imposed in the expediency of procuring sufficient funds from current revenues to meet high expenditures.

Methods of Taxation of Common Carrier Motor Coaches U. S. A. 1924-1929

	1924	1925	1926	1927	1928	1929
Special Fees in lieu of Registration Fees	15	16	18	21	18	18
Registration Fees on Same Basis as Private Passenger Autos	30	28	28	26	27	27
Registration Fees on Same Basis as Private Trucks	4	5	3	2	4	4
Total	49	49	49	49	49	49
Same Basis and Same Rate as Private Passenger Autos	26	24	24	20	23	21
Same Basis and Double Rate as Private Passenger Autos	2	2	2	2	1	2
Same Basis and 1½ Rate as Private Passenger Autos	1	1	..	..	..	..
Same Basis and Different Rate as Private Passenger Autos	1	1	2	4	3	4
Total	30	28	28	26	27	27
Same Basis, Same Rate + No Additional Fees Private Passenger Autos	11	10	9	3	2	2
Same Basis, Same Rate + Additional Fees	15	14	15	17	21	19
Same Basis, Same Rate + Same Basis, Same Rate	2	2	2	2	1	2
Same Basis, Same Rate + ½ Basis, Same Rate	1	1	..	..	..	..
Same Basis, Different Rate	1	..	..	4	1	2
Same Basis, Different Rate + Additional Fees	..	1	2	..	2	2
Total	30	28	28	26	27	27
Same Basis, Same Rate + Additional Fees, Trucks	2	4	2	1	3	3
Same Basis, 3 Times Rate	1	1	1	1	1	..
Same Basis, 3 Times Rate + Additional Fees	..	..	..	..	..	1
Same Basis, Different Rate	1	..	..	..	..	..
Total	4	5	3	2	4	4

However, during 1929 South Carolina will have in effect a tax of 6 cents per gallon on gasoline, and this may be indicative of a new upper maximum limit for such tax, which may be possibly as high as 10 cents per gallon, although such an increase would undoubtedly be accompanied by a substantial reduction in the amount of the annual registration fee, which would then probably be purely nominal, as was the original intention in this regard. The tax on gasoline is paid by all highway vehicles which use such fuel for motive power, and in this analysis is not considered as a special tax on motor coaches, for a private passenger automobile pays precisely the same amount of tax if it consumes the same amount of gasoline.

There has been a very considerable increase in the amount of the annual average payment under gasoline taxes, from $99.84 in 1924 to $251.43 in 1929. While in 1924 approximately 35 per cent of the average annual tax paid by the specified motor coach represented the payment of the tax on gasoline, by 1929 this percentage has increased to 45 per cent. If we consider the annual

average gasoline tax for 1924 to be 100, then a similar figure for 1929 would be 251.8, indicating an increase of approximately 152 per cent during this period.

Special Taxation

In this analysis the special taxes imposed on common carrier motor coaches, as distinct from registration fees and the taxes on gasoline, will be considered under three general headings:

(a) The kind or form of these special taxes
(b) The bases for such taxes
(c) The amounts of the taxes.

Kind or Form of Taxation

The kind or form of the special taxation imposed on common carrier motor coaches falls generally into four classes:

(1) Flat Rate: This tax plays a very unimportant part in the whole picture of special motor coach taxation, as in 1929 only two states imposed a tax of this description. The rates charged cannot be said to be based on any theory of taxation and in all probability represent a fee which formerly appeared as a sufficient extra tax on a motor coach when the operation of such vehicles was in its infancy. It is estimated that for 1929, only 1.6 per cent of the total amount of special taxes paid by the specified motor coach in each state is being paid under this caption.

(2) Actual "Use" of the Highway: While during 1929 all of the states impose a tax on gasoline consumed by highway vehicles, special taxation under this heading represents an additional "use" tax. A tax of this description represents one on the value received from the use of a public facility and may be said to be based on the theory of "ability to pay." While in 1924 only four states used this form of special taxation, by 1929 eight states have adopted such a tax.

(3) Potential "Use" of the Highway: A tax of this description in reality represents a tax on the privilege of using a public facility for personal gain, irrespective of the outcome of the exercise of such privilege. This tax may be in some measure commensurate with the value of a certificate of operation, but any such commensurability will of necessity vary under different conditions, as does the tax on gasoline, as representing the "use" of roads. Under the present day methods of granting certificates of operation, the privilege to operate motor coaches over certain sections undoubtedly has a monetary value, and as this privilege concerns the right to public property, it appears a basis from which to fix an amount of taxation. In 1924, 27 states used this kind or form of taxation for motor coaches, whereas in 1929, 30 states base the amount of special taxation of motor coaches on this theory.

(4) Potential and Actual "Use" of the Highway: Here we have a combination of the two foregoing forms of taxation, which is based on: (a) The privilege of using the highway; and (b) The result of the exercise of such a privilege.

It would appear that such a tax is commensurate both with the value of a certificate of operation and with the use made of it. The certificate of operation very closely approximates a perpetual franchise, and it appears that an operator should pay a tax in return for such a privilege to use public property, irrespective of what use he may make of his privilege. Again, the use of public property for personal gain, which a motor coach operation in reality represents, should be subject to a tax, which should have as its basis the measure of such "use," and it would appear that in taxation of this kind or form the motor coach would in all probability be most equitably taxed. While in 1924 only one state used this form of taxation, six have adopted it by 1929, and this represents the greatest change, during the period under consideration, in the kind of taxation imposed on common carrier motor coaches.

Bases for Special Taxation

Having very generally classified the special taxation of common carrier motor coaches into four kinds or forms of taxes, it will be of interest to examine the various bases used in the circulation of the amounts of such taxes. For special taxes measured by actual use of the highway, we find that four different bases are in use as follows: (1) ton mile; (2) coach mile; (3) passenger mile; and (4) gross income. Of these, the passenger mile basis is used in two states, the gross income basis in three, the ton mile basis in two, and the coach mile basis in one.

For special taxes, which have as a basis the potential use of the highway, we find that during the period under consideration, 13 different methods have been employed in attempts to assess taxation of this kind. During 1929, 25 states impose special taxation on the common carrier motor coach on some basis which has as a prime factor the seating capacity of the motor coach, while in 5 states the weight of the vehicle, either loaded or empty, is taken as being indicative of the potential use which the operator may make of the highway.

The other form of taxation which appears is a combination of the potential and actual use of the highway, and during 1929 six states assess motor coach taxation in this manner. In each case, the seating capacity rep-

Special Taxation of a Specified Common Carrier Motor Coach U. S. A. 1924-1929

Amounts Collected Under Various Forms of Taxation

			Actual Use of Highway					Potential Use of Highway						
								Capacity			Weight			
		Total	Flat Rate	Passenger Mile	Ton Mile	Coach Mile	Gross Income	Seat.	Weight	Pot. Pass. Mile	Gross	Net	Value	Horse Power
1924		7,758.00	192.00	.....	375.00	100.00	840.00	1,422.00	22.50	3,500.00	315.00	159.00	800.00	32.50
	%		2.5	0.0	4.8	1.3	10.8	18.3	0.3	45.1	4.1	2.1	10.3	0.4
1925		7,906.00	192.00	.....	375.00	100.00	840.00	1,642.00	22.50	3,428.57	315.00	159.00	800.00	32.50
	%		2.4	0.0	4.7	1.3	10.6	20.8	0.3	43.4	4.0	2.0	10.1	0.4
1926		8,444.74	192.00	.....	375.00	100.00	1,560.00	1,826.00	....	3,095.24	315.00	159.00	800.00	22.50
	%		2.3	0.0	4.4	1.2	18.5	21.6	0.0	36.6	3.7	1.9	9.5	0.3
1927		12,948.66	222.00	1,250.00	750.00	100.00	2,790.00	2,445.00	....	3,836.91	573.75	166.00	800.00	15.00
	%		1.8	9.6	5.8	0.8	21.5	18.9	0.0	29.6	4.4	1.3	6.2	0.1
1928		13,511.90	220.00	1,750.00	1,050.00	100.00	3,630.00	2,922.00	....	2,463.90	395.00	166.00	800.00	15.00
	%		1.6	13.0	7.9	0.7	26.9	21.6	0.0	18.2	2.9	1.2	5.9	0.1
1929		13,448.40	220.00	1,750.00	1,050.00	100.00	3,630.00	2,858.00	....	2,463.90	395.00	166.00	800.00	15.00
	%		1.6	13.0	7.8	0.7	28.0	21.4	0.0	18.4	1.9	1.2	5.9	0.1

PERCENTAGES OF TOTAL SPECIAL COACH TAXATION PAID ON DIFFERENT THEORIES OF TAXATION

	1924	1925	1926	1927	1928	1929
Flat Rate	2.5	2.4	2.3	1.8	1.6	1.6
Actual Use of Highway....	16.9	16.6	24.1	37.7	48.5	49.5
Potential Use of Highway..	80.6	81.0	73.6	60.5	49.9	48.9

resents the potential use while gross income represents the actual use made of the highways. During the period under consideration in this analysis, 22 different methods have been used to assess taxation on common carrier motor coaches, and 31 states during 1929 use the seating capacity of the motor coach as a basis for calculation of taxes, while in one case the basis or amount of the special taxes is indeterminable owing to the absence of sufficient data.

Amounts of Special Taxes

There is a complete lack of uniformity in the amounts of special taxes; whereas the motor coach in the state of Utah during 1928 would have paid a special tax amounting to $1,250, the tax paid in the adjacent state of Wyoming for 1928 would have amounted only to $20. By addition of the amounts of special taxes paid in each state in each year, we get an amount which may be taken as indicative of the increase in taxation of common carrier motor coaches during this period. The total of special taxes paid during 1924 was $7,758, while a similar figure for 1929 amounted to $13,448. This represents an increase of 73 per cent over 1924, which is assumed as 100. If these totals are divided by the number of states, we have an average special tax for every state.

During 1924 the average special tax was $158.32, whereas during 1929 it is $274.96; but, whereas during 1924 the special tax amounted to approximately 55 per cent of the total annual average in that year, during 1929 it represents only 49 per cent of the total tax. While during 1926 the gasoline tax represented a greater proportion of the total than did the special taxes, this situation was very materially altered by 1927, when the special taxes represented 56 per cent of the total and the gasoline tax only 38 per cent. Since that date the difference between these two percentages has been decreasing steadily, and apparently in 1930 a situation similar to that of 1926 may be anticipated, unless some very radical change is made in the methods or rates of special taxation.

In 1924 approximately 17 per cent of the total annual special taxes on common carrier motor coaches were collected on a basis of actual use of the highway, and 81 per cent were assessed on a basis of potential use. By 1929 we find that these two methods of taxation yield approximately the same percentage of the total, and that there has been a most distinct trend towards placing the special taxation of common carrier motor coaches on a basis of actual results from the use of the highway.

Total Taxes

The complete lack of uniformity in the total amount of annual taxes is very evident, for whereas in the state of Iowa during 1928 the total annual tax for a motor coach was $1,092.26, in the adjacent states of Missouri and Illinois, the similar taxes were $339.34 and $351.76 respectively.

The average annual total tax on a common carrier motor coach has increased from $286.37 in 1924 to $559.84 in 1929. By far the greatest increase in taxes paid has been in the gasoline tax, which shows little indication of remaining constant as yet.

While in 1924 the total average motor coach tax represented a payment equal to 2.4 per cent of the gross income for that year, by 1929 this percentage will have increased to 4.6 per cent, and will apparently tend to approximate a percentage of 5, unless some drastic change is made in either the method or rate of assessing taxation on common carrier motor coaches.

U. P. Expands Service

THE Union Pacific is proceeding rapidly with its program calling for the widespread operation of motor coaches supplementing train service over the wide area covered by the Union Pacific system. During the past month, there have been a number of noteworthy developments involving the establishment of additional motor coach service in the territory of the Union Pacific railroad itself, the territory of the Los Angeles & Salt Lake, and in the region covered by the Oregon Short Line and the Oregon-Washington Railroad & Navigation Company.

The Union Pacific system has been operating motor coaches in a few of the regions served by its railway lines over a considerable period of time.

The newest developments, however, including the purchase of a number of motor coach lines in the northwest and in the state of Nebraska, appear to indicate a plan on the part of the Union Pacific System to place its motor coach operations on a system-wide basis.

In the northwest, the Union Pacific is paralleling its principal rail lines between Portland, Ore., and Salt Lake City, Utah. Recent purchases of independent motor coach lines have nearly completed this program. With lines already in operation paralleling most of its rail lines in the state of Oregon, the Union Pacific through its subsidiary, the Union Pacific Stages, Inc., has recently secured from the public utilities commission of Idaho permission to operate motor coaches parallel to the railway line from the western border of Idaho near Huntington, Ore., to the Utah-Idaho border in the southeastern corner of the state. On August 1, the Union Pacific Stages consummated the purchase of the Bee Hive Stages, which operates between Salt Lake City, Utah, and West Yellowstone, with service also between Pocatello, Ida., and Montpelier.

It is understood that the Union Pacific will use its supplementary motor coach lines in the northwest territory not only to provide local passenger service but to permit through passengers by railway to break their journeys with motor coach trips through territory of particular scenic interest.

In the territory of the Los Angeles & Salt Lake, the Utah Parks Company has applied to the Utah Public Utilities Commission for permission to operate a motor coach service for passengers and express between Salt Lake City, Utah, and the Utah-Arizona state line. The coaches would operate over the Zion Park-Arrowhead Trail. Press reports state that it has been intimated that the motor coach service will eventually be extended from Salt Lake City to Los Angeles, Cal.

Other important developments have marked the progress of the Union Pacific in establishing motor coach service in the region covered by its lines in the territory between Omaha and Denver. Following its recent purchase of the Interstate Transit Lines, the Cornhusker Stage Line and the Queen City Coach Line, the Union Pacific applied to the Colorado Public Utilities Commission for permission to operate motor coaches between Denver, Colo., and the Kansas and Nebraska state lines, using the highways paralleling the two lines of the Union Pacific running out of Denver to the east and the northeast. The commission held hearings on this application at Burlington, Colo., on August 14, at Hugo, Colo., on August 15, and at Denver on August 16. The Interstate Transit Lines, motor coach operating company of the Union Pacific in the territory occupied by the Union Pacific Railroad has recently placed orders for 44 additional White motor coaches.

New Equipment

B. & O. Whiting Motor Coach Turntable

WHEN the Baltimore & Ohio inaugurated motor coach service between its Jersey City Terminal and important points in New York City it was found necessary to overcome traffic problems vastly different from those found in railroading.

The number of motor coaches used by the Baltimore & Ohio to deliver its patrons directly to their destinations in New York, and the peak loads confronted, in addition to the crowded streets and heavy sidewalk traffic made it imperative that arriving and outgoing coaches deliver and take on passengers under cover beside loading platforms on non-public property.

The Baltimore & Ohio has established one of its motor coach terminals in the Chanin Building, located near the Grand Central Station, New York. A special turntable made by the Whiting Corporation, Harvey, Ill., from designs made by L. P. Kimball, engineer of buildings, Baltimore & Ohio, has been installed in this building. Coaches are run on the table from the passageway on the right and after being turned about three-fourths of the way round are released to the passageway behind the wall shown at the left in the illustration.

This 16½-ton capacity table has a diameter of 30 ft., and with a peripheral speed of over 94 ft. a minute it is possible to obtain a complete revolution in one minute. As the coaches are turned only part way around the time of turning is less than a minute. The top is made up of a number of sectors of checkered plate ¾ in. in thickness which are suitably braced in such manner that the circular top is purposely made semi-rigid.

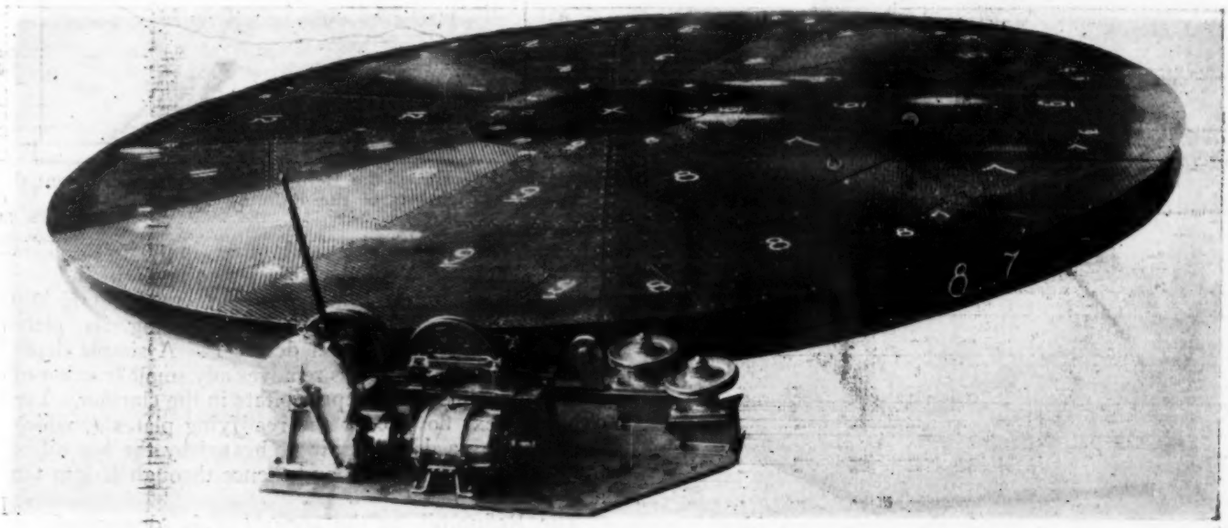
The table has its center on roller bearings and is center-pin mounted for maintaining position. At twelve points where the edges of adjoining sectors meet the circumference are located double rollers which run on the circular track in the pit. These rollers in tandem position are assembled in twelve small trucks, and the outer rim of the table rests on the center portions of the trucks in such manner that the load is equalized as the rollers pass over inequalities in the track, if such equalities should develop. The rollers are fitted with Hyatt roller bearings.

An edge-support of this kind was found necessary for the reason that any area near the edge of the top might be subjected to the weight of the coach, depending on what area was in line with the passageway. Furthermore, a motor coach turntable, unlike that for a locomotive, has the weight of the vehicle near the circumference.

The table is operated by electricity through the use of a 5 hp. motor operating at 1,000 r.p.m. A rope drive is employed—the continuous rope being ½ in. in diameter and made of a special flexible steel such as is used for cranes.

Around the edge, and below the surface of the turntable and attached to it is a circular channel member, vertically placed. It is around this channel that the operating rope is wound and its contact with the channel turns the table when the rope is in movement.

The power mechanism is below the floor surface in a pit adjacent to the turntable pit, which is 3 ft. deep. The motor, through a worm gear, turns the vertically placed 18-in. double rope driving sheave located near the edge of the turntable. The rope leaving the table channel or drum goes partly around a horizontally placed squaring sheave and over the driving sheave to a vertically placed take-up sheave. After passing around the latter the rope again passes over the driving sheave where it goes partly around another squaring sheave which guides it again to the table drum or channel. The squaring sheaves are so placed that the rope goes nearly around the complete circumference of the table channel. The take-up sheave is used to take up the slack in the rope in order to get the necessary fric-



Special Semi-Flexible 30-ft. Motor Coach Turntable Rope-Driven by an Electric Motor

tion between the rope and table. This take-up arrangement is hand operated by screws.

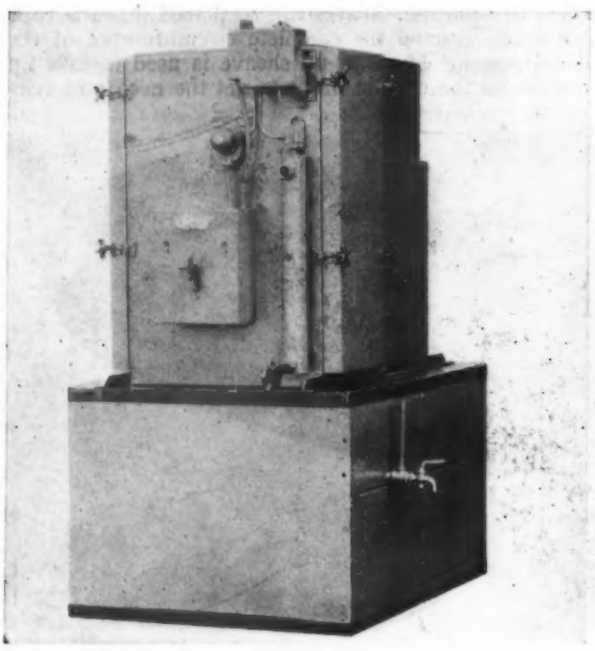
The Alemite system is used for lubrication and the fittings on the table may be reached from outside. In its endeavor to make the table operation noiseless the Baltimore & Ohio required that all ground mounting be insulated. As a result the center casting of the table and the circumferential road bed are cork mounted. This also applies to the base supporting the motor and its sheaves. Lead is also used to deaden sound.

Automatic Crank-Case Oil Reclaimer

IN the interest of fuel conservation and economy of operation, the operators of large fleets of trucks and motor coaches are reclaiming crank-case oil and putting it back into service. Among the equipment used for this purpose is an automatic oil reclaimer developed and patented by the General Electric Company and manufactured and sold by the Hilliard Corporation, Elmira, N. Y.

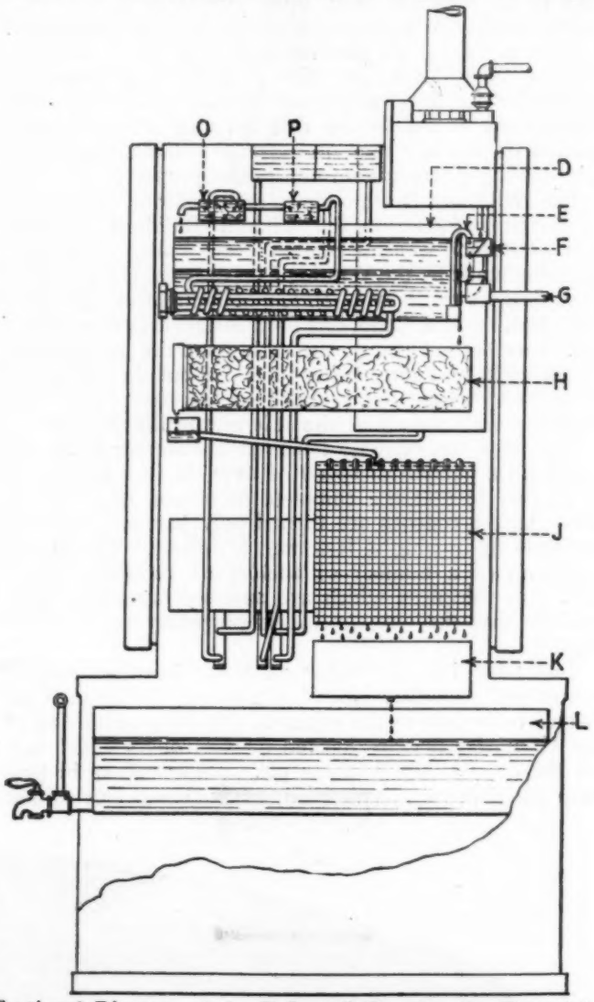
The process used in this machine embodies the fundamental alkali treatment and removal of dilutents by heat. Its unique features lie in the use of concentrated silicate of soda (water glass) as alkali and in evaporating rather than distilling off the dilutents by running the oil in a thin film over corrugated electrically-heated plates in a strong draft. Concentrated silicate of soda was found to have the property of correcting acidity and removing all solid matter and certain other deleterious products of oxidation, forming a dense and heavy sludge which not only settles almost immediately, but also has the unique and useful property of sinking completely out of the oil into an underlying body of water. This is maintained in constant flow, thus continuously flushing the sludge which is oil-free, into the drain. These properties make possible an automatic, continuous process from beginning to end.

While many oils react satisfactorily with the silicate alone, some require an additional reagent to promote the characteristic effect of the former. This reagent, prepared under the trade name Gelco, is made a regular element of the process. These reagents are continuously metered into and mixed with the oil fed to the machine. The entire apparatus is assembled within a compact housing and is operated by the regular lighting current which supplies also the heat and power.



The 20 Gal. Capacity Refinoroil Which Requires a Floor Space of 38 in. by 47 in.

In the reclaiming process two steps are involved: clarification and rectification. Referring to the drawing, the oil, preheated, is mixed with the reagents *O* and *P*. This develops a rapidly-settling oil-free sludge,



Sectional Diagram of the Refinoroil Showing the Essential Elements of the Refining Process

which carries the solids and other impurities. This sludge sinks into an underlying water layer in the settling tank *D* and is continuously evacuated at *E* into the drain through *G*, fresh water taking its place through an interfacial level device *F*. A simple depth filter *H* of cheap materials removes any small fraction of the sludge which fails to precipitate in the clarifier. The clear oil next flows over the rectifying plates *J*, which are swept by a draft of air preheated by the hot oil in the heat interchanger *K*, and thence through *K* into the storage tank *L*.

The Refinoroil, as the apparatus is designated, is manufactured in three sizes, having 24-hr. capacities of 8, 20 and 50 gal., respectively.

"Questions and Answers"

This Month's New Questions

Question No. 6

Insurance for Motor Coach Operators

"What have the various railway motor coach companies found to be the most satisfactory method of handling insurance? Do they adopt generally the method of straight insurance on the individual-coach basis; do they find it preferable to place the insurance on a gross income basis; do they find it desirable to carry all the risk themselves; or do they find it expedient to carry the risk in the lower amount—say up to $25,000 for any one accident—themselves, and farm out the higher amount up to, say, $100,000 for any one accident with independent insurance companies?"

Question No. 7

Preparations for Motor Truck Service

"What has been the procedure of railways contracting for motor truck service to replace way freight trains; that is, how do they go about selecting the trucking company, what requirements do they make as to equipment and labor, for what work do they make the trucking companies specifically responsible in the contract, and how do they arrive at a satisfactory basis of payment for the trucking service?

"Also, why do most railways contract for motor truck service when the majority of roads operating motor coaches carry on these operations through subsidiary companies?"

What Is Your Answer?

Replies to Question No. 3

Running Second Sections

"It is advisable, when necessary to provide a second section of any trip on long runs, to operate the coach through to its advertised destination, or may passengers be transferred from the second to the first section at any point enroute when the number of passengers on both sections together does not exceed the seating capacity of the coach running as the first section?"

Keep Sections Close Together

I would say that it is advisable to run the extra sections through on long runs, unless the coach is needed at the opposite terminal for return service, which information should be available before sections are operated.

If sections are run which are to be doubled up en route, they should be kept together in order that this may be accomplished with a minimum of delay.

F. S. Hobbs,
General Manager, New England Transportation Co.

Transfer at Terminals

When it is necessary to provide a second section on any trip of a long run, we have made it a practice to transfer passengers to one coach at any of our main terminals on the route.

By this we mean that we have several stations which we consider major terminals, and it is only at these points that we permit such transfers to be made.

W. A. Taussig,
General Superintendent, Southwestern Transportation Co.

Turns Back Second Section

On our run, which is 116 miles long, we do not find it advisable to run the second section all the way through, but load the short-haul passengers into the second section. When the second section has been unloaded and seats are available in the first section to accommodate pickups on the balance of the run, the second section is turned back to the starting point. We find an overload in one direction does not necessarily mean an overload returning, and by turning back the equipment when the second section is unloaded, we are able to hold down the number of coach miles.

I do not think a set rule will work on all runs; each run will have to be worked out to meet the local conditions.

I. B. James,
President and General Manager, Denver-Colorado Springs-Pueblo Motorway.

Does Not Run Through

Due to the nature of our operation, where so few large cities constitute our termini, it is not advisable to operate extra coaches through to the advertised destination. When leaving the city where an extra coach is

required, the first coach carries a seated load only, leaving six to nine aisle chairs for short-haul pick-ups. The second coach carries the overflow, which consists of short-haul passengers separated at the time of the loading. The driver of the extra coach then has a fair idea of how far he must go. Providing the pick-up business does not oblige him to go further, the dispatcher expects a call from him at the point designated on the dispatch board before the coaches leave the city. Upon his arrival at that point, the dispatcher in the city has heard from the inbound coach on the same route and is in a position to know whether the outbound extra should follow the inbound regular coach to the city.

This system has saved us a good many dead-head miles and has given the regular driver of the regular run a certain amount of authority over the extra man, which tends to impress upon the younger man the importance of training himself for a better job in the future. It likewise places more responsibility on the regular driver, and alleviates to a certain degree the duties of the dispatcher who naturally cannot know how every run every day must be handled.

As a matter of record, such a system likewise enables us to judge fairly accurately where our extra coaches should be placed on exceptionally busy days such as holidays and when there are conventions on certain routes.

R. W. Budd,
Manager of Operations, Northland Transportation Co.

How Oregon Stages Handle Extra Sections

The question asked by your reader is one with which we have had considerable experience and is in fact a situation with which the Oregon Stages, Inc., is confronted several times daily. Broadly, the answer to the question would be that it is not advisable to run a second section through on a long run when the number of passengers on both sections together does not exceed the seating capacity of the coach running on the first section. There are, however, certain qualifying factors which may justify or compel this; namely, the hour of the day or the day of the week, or other seasonal time, local intermediate traffic, the direction of travel, state laws governing protection of all traffic presenting, nature of carrier's certificate, frequency or headway of following schedules, distance between terminals, junctions or other strategic points where equipment is located, and the type, size and availability of equipment.

It may be of interest to learn how the overload situation is handled by the Oregon Stages, Inc., in Oregon—a method developed by many years of experience, and which has proved satisfactory to meet the varying conditions with which we have been confronted.

Our main line extends from the northern tip of the State at Portland to the southern extremity of the state, over the Pacific Highway. Portland is our headquarters and here is located our main garage some 10 or 12 blocks distant from the passenger terminal. Terminals southward and at which equipment is available are Salem (52 miles), Corvallis (88 miles), Eugene (130 miles), Roseburg (200 miles) and Medford (317 miles).

The territory between Portland and Eugene is well populated, particularly so between Portland and Salem where we operate a schedule every hour throughout the day, and in the mornings and evenings at intervals of 30 minutes. Between Salem and Eugene schedules are not so frequent—15 each way daily. South of Eugene, the territory is "thinner" from a traffic standpoint—9 schedules each way, 6 of which comprise our through Portland-San Francisco service and which are tendered by us or handed to us by our connections at Medford.

Southbound from Portland, when traffic presents itself in a volume sufficient to fill completely or almost fill the through-schedule coach, an extra coach is arranged for from the garage. The through or longer-distance passengers are seated in the through coach and short-haul passengers in the overload coach. It has been our experience that the overload coach should travel ahead of the through coach to care for intermediate pickups.

After traveling through the suburban territory, and should conditions warrant, such as time of day, season, etc., and the overload coach has disposed of its load or has a small number of passengers left that may find seating space in the through coach to the next divisional point, these are transferred at a "rest stop" or other place, as it may seem advisable. It is customary for our driver to call up the dispatcher from such a transfer point, advising of the arrangement and obtaining instructions, as his equipment may then in turn be utilized as an overload coach for a through northbound schedule, or as otherwise determined. Expensive "deadhead" mileage is thus kept down to the minimum.

Great care is exercised by us in the use of equipment, as the monthly state mileage tax is assessed on the basis of the seating capacity of the coach, regardless of the number of passengers occupying the seats; in other words, an overload coach of 26-passengers seating capacity is taxed for 26 passengers for the miles run at three-fourths of a mill per seat mile, even though only 2 or 3 passengers may actually be handled. This reference to the tax is made in order that the questioner may bear in mind the expediency of conservation of car miles in the matter of overloads—an important factor in determining the question of why, if possible, a second or other section should not accompany the through schedule any further than is necessary. Our July figures are not available at this writing, but are in case of June, during which month we ran 574 overload trips, covering 24,718 miles.

To get back to our southbound schedule. The regulatory law of Oregon requires of intrastate carriers "that in case regular scheduled passenger vehicles are not able to afford transportation to all passengers offering themselves for carriage, additional equipment shall be provided and operated as long as necessary as a second section to such vehicle." If for some reason no equipment is available or a second or other section has been dismissed and passengers are present, taxi service is used at the discretion of our driver to the first division point, or is utilized in the handling of short-haul passengers as far as it may be needed.

Southbound through the various divisions to Medford, the above practices have been followed, governed, of course, as to the varying conditions of season, territory, time of day, connections at junction points, northbound operations and, primarily, service and obligations to the traveling public.

Northbound, the conditions on our main line are somewhat different and the answer to the question asked by your reader would be in the affirmative. Local traffic in the southern end of this state, Medford to Eugene, is comparatively light and our schedules are fewer. Distances between terminals are longer, but on the other hand we have junction points at Medford (from Klamath Falls), Grants Pass (from California and Redwood Highway) and Roseburg and Drain (from Coos

Bay and Western Oregon), all important feeders of our main line schedules.

Our northbound schedules, handed to us at Medford by our southern connections from California over the Pacific Highway, usually consist of a full or the nucleus of a full load of through Portland or long distance passengers, increased by our branch line connections and local passengers originating at Medford.

We will take, for example, the early morning schedule northbound from Medford, due to arrive in Portland the same evening. An extra coach is furnished to run and keep on schedule time, but ahead of the regular schedule which may consist of one or more completely loaded coaches. If possible, a few seats are left vacant on the regular coach to take care of such late passengers as may possibly appear after the overload coach has gone by. We run this overload coach a few minutes ahead of the regular coach to clean up the local business and to leave room, say, at rest stops or meal stops, for the better convenience and comfort of the long distance passengers on the scheduled coach or coaches. Our experience has been that during the time of heavy travel there may be delays at meal or rest stops incident to feeding, comfort and getting the passengers reseated. Advance information from Medford is phoned north to the dispatcher and our terminal supervisors, as to the number of passengers and coaches handling the northbound schedule, and in turn Roseburg, Eugene, Salem or Portland will make the necessary arrangements for additional cars and men at strategic points as conditions may warrant.

Northbound, as distinct from southbound, the overload car starting from Medford usually goes through, as northbound local traffic becomes more dense as it proceeds. Passengers from Medford or beyond are usually through; hence the first overload car running ahead in turn fills up, becomes a through car and drops back to accompany the first section, and again in turn a local car is run ahead from Roseburg or Eugene. By the time Salem is reached we are approaching still denser local territory, and junction feeders and it is not infrequent to find that this particular Medford to Portland schedule has grown to be one of three to six sections out of Salem, and this is typical of our other long distance schedules.

Summarizing, the answer to your correspondent's question resolves itself to one dependent upon varying conditions. For instance, with a long distance interstate carrier, having no local franchise or certificate, few schedules, no intermediate terminals, a uniform type of equipment as to seating, and with prospects of pick-ups, the answer would probably be in the affirmative.

With a situation like ours in Oregon, where we have at our various terminals or available at junction points, coaches varying in size from 7, 10, 18, 20 to 30-passenger capacity and operating as shown above, the answer could well be in the negative.

R. W. LEMEN,
President, Oregon Stages, Inc.

Replies to Question No. 4

Handling Mail by Motor Coach

"What is the best method of taking care of mail traffic, previously handled by train, when it becomes advisable to take off the train on account of declining passenger business? Can mail be handled profitably in motor coaches if they are put on when the train is taken off?

Coaches Can Handle Small Volume

Our experience in such instances has been that each case must be handled individually, so as best to take care of its particular requirements. Where the amount of mail to be handled is small, it can usually be taken care of on the motor coaches without inconvenience to the passengers or delay to the schedule.. Where the rail rate is sufficient to make it profitable, no change is made in that respect. However, if this is not the case, then an endeavor is usually made to place the mail service on a Star Route basis.

In some heavily populated districts it is often impossible to take care of the mail on the regular schedule motor coaches, necessitating the operation of trucks. Where this condition prevails, then the cost of such service must be taken into consideration in arriving at a proper basis of compensation.

T. B. WILSON,
President, Southern Pacific Motor Transport Company.

Usually Underbid on Heavy Loads

When motor coaches are substituted for trains, and it would not be satisfactory to local people to handle the mail on other trains, if any, the government will outline a schedule of highway service and post bid notices in public places at the points to be served.

If the quantity of mail is so great that it cannot be handled in a motor coach without interfering with passenger comfort, we have found that our bids have been too high because it is necessary to figure a small profit in the use of a light truck, and usually some local party doing a trucking business will underbid.

This department has been established as a regular monthly feature of the *Motor Transport Section*, to provide a means for the exchange of information, based on experience, on every phase of motor coach and motor truck operation. It is strictly by and for the readers of the *Motor Transport Section*. If you have a question about any matter of motor coach operation or maintenance procedure, concerning which you would like to know what the experiences of others have been in handling the same problem, you are cordially invited to submit it for publication in this department. Your name will not be published with the question. In order that those who submit questions may have the benefit of as many viewpoints as possible in the answers to their questions, all readers of the *Motor Transport Section* are urged to give the benefit of their experience to our questioners and to others through replies to the questions published, when such questions strike at a matter which they have had to handle. We feel sure that our readers will be willing to co-operate whole-heartedly in replying to the questions published, because by this means knowledge of the best methods will be made generally available and the general efficiency of motor coach and motor truck operation in the United States will thereby be promoted. All questions and answers should be sent to the Editor, *Motor Transport Section*, *Railway Age*, 105 W. Adams Street, Chicago. The replies, which are selected for publication, will be paid for at the rate of from $2 to $5 per reply.

Should the quantity of mail be such that it could be carried on motor coaches conveniently, we have found it profitable to handle it.

H. C. AHERN,
Assistant to Manager, Motor Coach Service, Boston & Maine Transportation Co.

Extra Mail Equipment Expensive

When a steam train is replaced by a highway motor coach it is, of course, desirable that such coach handle mail if it is possible to do so, the limitation being naturally the size of the coach which can economically be operated over the route and the amount of mail necessary to handle it?

If the conditions from the physical limitation standpoint can be met, then it is profitable to handle mail. If extra equipment other than that required to give the regular scheduled motor coach service would be necessary if mail were handled, then there is serious doubt as to whether or not any profitable arrangement could be made.

In the latter event, it is generally preferable to notify the Post Office Department that the train service has been discontinued and ask them to make such arrangements as they can for the successful handling of mail. They usually establish a Star Route and advertise for bids. Frequently a motor truck operator in the territory can then handle this mail as an adjunct to his regular trucking business at a low cost to the government which at the same time might be profitable to him. The motor coach company can do the same thing with its regular equipment, but if either the motor truck operator or the coach company had to provide extra equipment, then the one which could handle the mail as an adjunct to its regular service without the provision of extra equipment would undoubtedly secure the contract through its ability to quote a lower figure.

M. F. STEINBERGER,
Manager, Highway Transportation, Baltimore & Ohio.

Replies to Question No. 5

Dispatching of Tractors and Trailers

"In working out an operating plan for a tractor and semi-trailer service intended to provide frequent deliveries between a half-dozen stations, is it better, from the standpoint of good service and of keeping operating costs as low as possible by eliminating tractor standing time and light mileage, to arrange a fixed schedule for the tractors between stations and hold them to it whether or not the trailers haul full loads, or to work out some dispatching scheme whereby the tractors can be sent at any time to any station where a fully loaded trailer is waiting?"

Favors Flexible Dispatching Method

We believe the most efficient and economical operation of tractors and trailers is accomplished by dispatching tractors to move trailers when loaded or empty, or to meet the requirements of the service. This plan is used in our operation of 63 tractors and 159 trailers in Chicago, and is also used with smaller fleets in our service in other cities.

This plan of operation is far more elastic than attempting to move trailers on a fixed schedule and we are sure more economical.

A. C. WHITE,
General Manager, Chicago Department, Railway Express Agency.

Favors Scheduled Operations

We feel it is better from a standpoint of good service and to keep operating costs as low as possible, to keep our tractor in service as much as possible during stated hours, and to do this we have been working to a predetermined schedule—our motor truck equipment consisting of one tractor and four trailers.

One trailer is placed for unloading and reloading at our Taylor Street, Chicago, freight house, and one at our Blue Island freight house. Our schedule provides for the tractor, with trailer loaded at Taylor Street freight house, to depart from Taylor Street about 3:00 A. M. for Blue Island, placing the trailer at the Blue Island freight house and picking up trailer loaded at that point the previous afternoon, and returning through to Taylor Street, then picking up trailer loaded at Taylor Street the previous afternoon and going to Englewood, spotting the trailer at the freight house and picking up trailer which has been at that point since previous day for loading, and returning to Taylor Street. About 10:00 A. M., the tractor, with one trailer, moves through to Blue Island, stopping at the freight houses at Englewood, Gresham, Washington Heights, and Morgan Park, and returning immediately to Taylor Street, Chicago, picking up all outbound freight. This, with some switch movements from the inbound to the outbound house at Taylor Street between 7:00 and 10:00 A. M., permits us to keep the tractor in service from twelve to thirteen hours each day, making an average of 72 miles per day.

Our business is such that we secure a good average load each trip. We have a local freight solicitor working in the Chicago district who keeps closely in touch with the movement of these vehicles and as necessity arises he is authorized to have the tractor make extra trips.

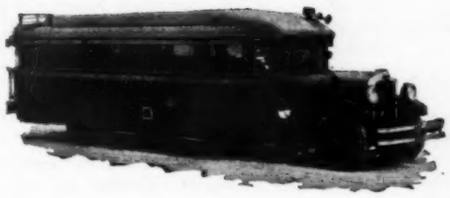
A. W. TOWSLEY,
Assistant to Vice-President, Chicago, Rock Island & Pacific.

Combination Found Efficient

It has been our experience that better service and the lowest possible operating cost can be obtained by pulling trailers on a fixed schedule between stations, and holding them to this schedule insofar as the regular pulls are concerned. Through the use of this method tractors may be utilized to the fullest extent, as the running time between stations can be accurately determined and schedules so arranged as to eliminate stand-by time. A strict observance of this plan is necessary where train schedules have to be met, which is true in almost every instance where the shuttle system is employed in connection with railroads and express companies.

To this fixed schedule may be added a flexible service through which extra tonnage is handled prior to the last pull without disturbing the fixed schedule, as the agent at any of the stations can always anticipate his requirements prior to the closing-off time and secure from the dispatcher in charge of the tractors and trailers extra equipment to meet his requirements. Under this plan one unassigned tractor and a half dozen trailers will take care of a large number of stations without interfering in any way with the fixed schedule.

E. M. SCOTT,
Drayage Service Corporation, Oakland, Cal.



NEWS *of the* MONTH

Great Northern Transfers Control of Northland Transportation Company

Great Northern joins Pennsylvania and Southern Pacific in acquiring substantial stock interest in country's largest long-distance motor coach organization

That the Greyhound Lines have established themselves still more firmly as a motor coach operating organization affiliated with the steam railways, became apparent on August 6, when announcement was made that the Great Northern had sold the controlling interests in its motor coach operating subsidiary, the Northland Transportation Company, to this organization. Previously, the Greyhound Lines, in connection with the Southern Pacific, had merged their interests on the Pacific coast, and in other parts of Southern Pacific territory in order to provide supplementary motor coach service paralleling the Southern Pacific railway lines; and had also entered into a contract with the Pennsylvania, the Pennsylvania taking a substantial financial interest in the Greyhound Lines, to provide supplementary motor coach service in Pennsylvania territory.

News that the Northland Transportation Company had passed into the control of the Greyhound Lines was not surprising, in view of the fact there has always been a community of interest between the two organizations. C. E. Wickman, president of the Northland Transportation Company, is a large stockholder in the Greyhound Lines. The Great Northern on August 6 described the change in control of its subsidiary in the following statement:

Control of the Northland Transportation Company has been sold by the Great Northern Railway to the Motor Transit Corporation and Automotive Investments, Inc., organizations affiliated with the coast-to-coast motor coach system of the Greyhound Lines. The property will be operated under the name of Northland Greyhound Lines.

The Northland company, a $5,000,000 corporation, has been the motor coach operating subsidiary of the Great Northern since 1925. It operates more than 3,300 miles of coach lines, chiefly in Minnesota but also entering Wisconsin and North Dakota. In 1928 it carried more than 3,150,000 passengers, and its annual revenue is approximately $2,500,000. Its business and revenues for the first half of 1929 have been substantially better than in 1928.

In announcing the sale of the property, Ralph Budd, president of the Great Northern, said the railway will keep a large minority interest in the motor coach company and will be represented on its board of directors. In conformity with the national policy of the Greyhound system, the Northland Greyhound Lines will co-operate with the railway by giving motor coach service which will supplement train service.

Similar arrangements have been made in other sections of the country between the Greyhound Lines and large railway companies, a number of which are now minority stockholders in motor coach operating companies affiliated with the Greyhound system. Among these rail lines are the Pennsylvania, Burlington and Southern Pacific. The soundness of this policy and its success elsewhere, Mr. Budd said, were important considerations in influencing the Great Northern to accept the offer for the Northland.

The Greyhound system, which is managed by the Motor Transit Corporation, extends from New York to Los Angeles and from the Great Lakes to the Gulf of Mexico. It includes the Eastern Yelloway lines, and in addition has a substantial interest in the Pickwick, Southern Pacific and western Yelloway bus lines.

"This large motor coach operating organization," Mr. Budd said, "will enable the Northland to get the benefit of the most important connections in this field in the United States, as well as the expert management with which the Greyhound Lines have associated themselves through the Motor Transit Corporation.

"We feel that the future of the Northland, as well as that of the public it serves, is improved and protected in this way more advantageously than it would be if the company were continued as a separate, wholly-owned railway subsidiary which would be a relatively small motor coach operator compared with the large system of which it will now become a part.

"As a large minority stockholder, and on account of the Northland serving Great Northern territory, the Great Northern Railway will continue its interest in the progress and development of this highway transportation system under the new management."

The Northland Transportation Company was formed in 1924 by consolidating several small lines. It was acquired by the Great Northern in the early summer of 1925 and since then has been expanded until its lines form a network in Great Northern territory in Minnesota. Its purchase by the Great Northern marked the first direct entry of an American railway company into the motor coach business on a large scale.

The experiment proved successful. Mr. Budd, in the last annual report of the Great Northern, said regarding the Northland operations: "This service, supplementing the railway trains as it does, has been very successful both from the standpoint of the public and the railway company."

Question Railroad Right on Highway

The right of a railroad subsidiary to operate motor coaches in the state of Virginia was questioned at a recent hearing before the State Corporation Commission on applications for certificates to operate motor coach service between Virginia Beach and Ocean View, Va. One of the applicants was the Norfolk Southern Bus Company, subsidiary of the Norfolk Southern. Following the hearing the commission informed counsel for the Norfolk Southern Bus Company that it must yet be determined whether a railroad can legally receive a permit to operate a motor coach line.

Independent Trans-Pennsylvania Route Approved

The Public Service Commission of Pennsylvania recently approved the application of the Great Lakes Stages, Inc., for a certificate to operate a motor coach line across that state via Port Allegeny, Scranton and Philadelphia. The company had previously operated in interstate service from Cleveland, Ohio, across Pennsylvania to New York.

B. & O. West Virginia Route Mileage Doubled in Six Months

The latest time-table of the West Virginia Transportation Company, highway subsidiary of the Baltimore & Ohio, lists seven motor coach routes extending over more than 200 route miles and thus reveals that within the past six months the operations of this company have doubled. In February of this year the service extended over 100 miles on five routes. The company has recently placed in service three new Model 602 A. C. F. motor coaches.

The longest route is the Grafton-Clarksburg-Parkersburg line covering 104.8 miles in each direction. Two daily trips from Pennsboro to Parkerburg (44 from Grafton to Parkersburg while in the return direction three through runs are made each day. Motor coaches for Parkersburg leave Grafton at 10 a. m. and 1:00 p. m. and the returning through coaches leave Parkersburg at 6:00 and 9:45 a. m. and 12 noon. In addition to the through runs there are two daily round trips on this line between Clarksburg and Parkersburg, a distance of 84 miles; one round trip each day between Grafton and Pennsboro, a distance of 60 miles and one-way trips from Pennsboro to Parkersburg (44 miles), from Clarksburg to Pennsboro (40 miles); from Grafton to Clarksburg (20 miles) and finally a short daily round trip between Salem and Clarksburg (16 miles).

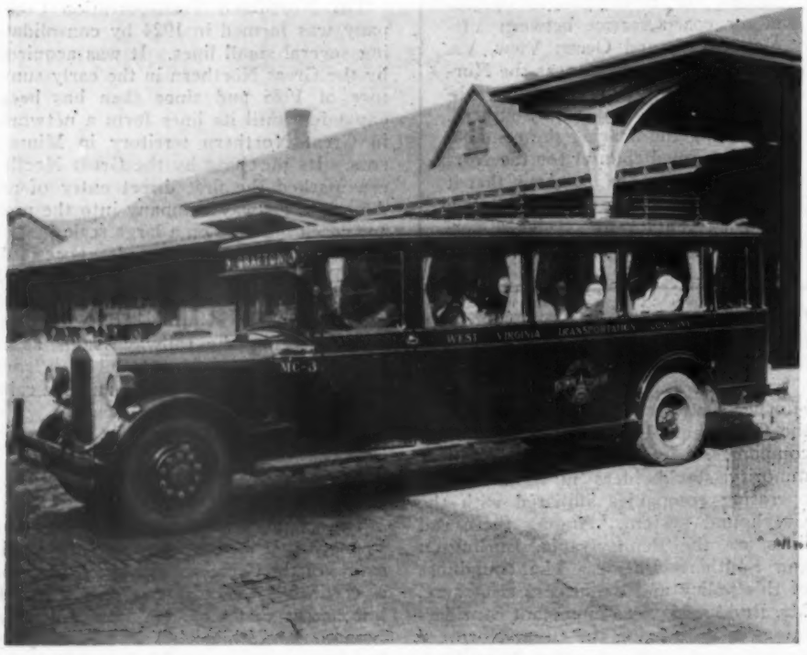
The second longest route is the 24.7 mile run between Clarksburg and Weston. There are two daily round trips over this entire route and four other runs which cover only part of the distance.

Between Fairmont and Grafton, a distance of about 22 miles, seven daily round trips are made while on the 12-mile Grafton-Wendel-Rosemont route nine round trips are run each day.

There are two 15-mile routes—one between St. Mary's and Ellensboro and the other between Buckhannon and Weston. On the former four daily round trips are made, while on the latter there are six round trips with an additional Buckhannon-Weston run each day.

According to the information published in the time-table, children under five years of age are carried free when accompanied by an adult and not occupying a seat, children between the ages of five and twelve years are charged half fare, while all over 12 pay full fare.

Baggage limited to 50 pounds is transported on the motor coaches subject to space limitations with liability in event of loss limited to $25.00. Trunks and other large pieces of baggage are not handled on the motor coaches, but between points served jointly by the Baltimore & Ohio and the West Virginia Transportation Company, may be checked for rail movement on presentation of a motor coach ticket. Stop-overs are not permitted on through motor coach tickets.



An A.C.F. Motor Coach in B. & O. West Virginia Services

Northern Pacific Completes Survey for Motor Coach and Truck Operation

The Northern Pacific has completed a study of the territory served by its lines to determine where it might operate motor coaches and trucks to advantage. The survey was made by B. O. Johnson, assistant to the vice-president in charge of operations of the Northern Pacific, and A. Tinling of the traffic department. In an automobile trip from St. Paul, Minn., to Seattle, Wash., Mr. Johnson and Mr. Tinling made a detailed study of motor coach and truck operation in Northern Pacific territory by independent competitors.

According to B. W. Scandrett, executive vice-president of the Northern Pacific, the data secured in this survey are being studied, but no decision has been reached as yet as to whether or not the proposal of motor coach and truck operation at various points will be carried out. An important part of the survey, according to Mr. Scandrett, was the study of the possibility of eliminating unprofitable local train service through the substitution of less expensive motor coach and truck service.

Appeal in St. Louis Transfer Case Rumored

The Central Transfer Company of St. Louis, Mo., is reported to be planning an appeal to the courts from the ruling of the Interstate Commerce Commission to the effect that the railways in St. Louis, Mo., and East St. Louis, Ill., may grant to the Columbia Terminals Company exclusive transfer privileges in the handling of their l.c.l. freight interchange.

Mo. P. Extends Operation in Louisiana

The Missouri Pacific Transportation Company has been granted permission by the Louisiana Public Service Commission to operate motor coaches supplementing train service between Marian, La., and Louisiana-Arkansas state line, via state highway No. 156; between Mer Rouge and Oak Ridge, and between Mer Rouge and Collinston. Each of these routes covers about 10 miles.

Reading Allentown-Harrisburg Certificate Granted

The Reading Transportation Company, highway subsidiary of the Reading was on July 9, granted a certificate, by the Public Service Commission of Pennsylvania, to operate a motor coach service between Allentown and Harrisburg, Pa. At the same time the commission also granted a certificate to the Allentown & Reading Transit Company for the operation of a second highway line between the two cities. The order prohibits both operators from carrying passengers between points served by existing local motor coach lines.

Reading Begins Operation of Philadelphia to Reading Coach Line

Motor Coach service between Philadelphia, Pa., and Reading was inaugurated by the Reading Transportation Company, a subsidiary of the Reading Railroad, on August 15. The route extends through the Schuylkill Valley embracing stops at Norristown, Collegeville, and Pottstown.

The latest design of the club-parlor type of coaches are used in the service, with three round-trips in each direction scheduled at the beginning. Each coach will have a capacity of 30 persons.

Coaches leave Reading Terminal, Philadelphia, daily except Sunday at 7:00 a. m. and 12:30 and 6:00 p. m. daylight time while the schedule of departure from Reading is 11:05 a. m. and 2:05 and 7:35 p. m. (eastern standard time.)

The route serves territory hitherto unprovided with direct motor coach service. Stops to pick up or discharge through passengers are made on signal at the new North Broad Street Station of the Reading Company in Philadelphia, and at Midvale and Ridge avenues. The first regular stop is at the Wissahickon station of the railroad. Three additional signal stops are made in Roxborough at Memorial Hospital, Shawmont avenue and Country Club. Stops from this point are as scheduled on the time-table and include the following: Barren Hill, Harmonville, Reading station at Norristown. Ford Street and Forrest avenue are additional signal stops in Norristown. Stops then are made at Jeffersonville, Trooper, Eagleville and Collegeville Reading Station. Signal stops in Collegeville are at Perkiomen Pike and Ursinus College.

Leaving Collegeville the route extends to Trappe, Limerick, Sanatogo and Pottstown where, in addition to the stop at the Reading Station where connections are made with the company's motor coach line to Barto others are at Washington and High streets and the Hill School. The remaining stops on the route are at Stowe, Douglassville, Mt. Penn and then Reading. Franklin Street Station is the Reading terminus of the line. Connections may be made at this point with the Reading motor coach service to Harrisburg, Allentown and Hamburg.

One-way fares from Philadelphia are as follows: Norristown, 55 cents; Collegeville, 75 cents; Pottstown, $1.15 and Reading, $1.65 with proportionate rates to intermediate points.

"This service," said E. D. Osterhout, passenger traffic manager of the railroad and manager of the Transportation Company is in line with the Reading's policy of amplifying its service and giving the public the choice of either rail or highway transportation, and is consistent with the movement throughout the country for the railroads to operate motor coaches supplemental and complementary to their rail lines for short as well as long distances. The Reading management believes that this co-ordinated service, using the terminals and other existing facilities of the railroads wherever possible will best serve the public interest and tend to insure a continuance of high grade rail and motor coach service.

"This motor-coach line will be essentially of an intercity nature for the transportation of through passenger rather than those making short trips locally between adjacent or nearby points enroute within the zone of service of a paralleling trolley or other motor-coach line."

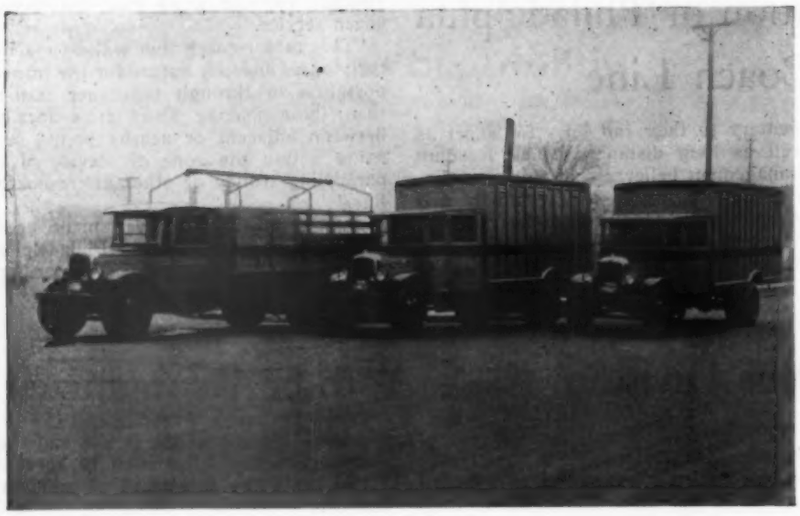
Announcement also was made that through service between Philadelphia and Pottsville will begin in September.

Bus Division, A. A. A. to be Reorganized

The National Motor Bus Division of the American Automobile Association is to be completely reorganized. The first step in this direction was taken on August 22, when motor coach operators and state association officers met in Chicago to discuss the proposed changes in the make-up of the Division. This meeting was called as the result of a decision reached at the annual meeting of the Division held at Buffalo, N. Y. on July 1. A special committee has drawn up a set of by-laws, which have not yet been approved, however, by the members or officers of the motor bus division, except those included in the membership of the special committee.

According to these proposed by-laws the new organization will be known as the National Association of Motor Bus Operators, and will have headquarters at Washington, D. C. The purposes of the association will be: "To promote and develop the business of transporting persons by motor vehicles between fixed termini on regular schedules and through special service, to the end that the best interests of the public and the members of this association be served; to advocate the enactment of uniform, just and proper laws regulating the motor transportation business; to promote closer relations and cordial co-operation among the members; to promote friendly relations with and to secure the co-operation and good will of the public; to improve the transportation service rendered by its members; to promote the construction of roads of proper width and grade, and of such material and over such routes that will best inure to the benefit of the public and the motor transportation business, and to promote the maintenance, repair and improvement of all roads used by motor transportation; to promote the establishment of necessary motor coach terminals and connecting schedules; to co-operate with all public officials in securing the proper enforcement of all laws affecting motor transportation; to promote street and highway safety; to do all things tending to promote the safety, convenience and betterment of

Automotive Lighting Exhibit
The automobile lighting laboratory which is a part of the Westinghouse Lighting Institute recently opened as a permanent exhibit in Grand Central Palace, New York.



General Motors Trucks in Highway Services of the Cotton Belt

the motor transportation business, and in general to do everything in its power to best serve the interests and welfare of the members of this association and the public at large."

B. & M. Seeks Line Into N. Y. State

The Boston & Maine Transportation Company is seeking permission to operate a motor coach line between Troy and Hoosac Falls, N. Y., and North Adams, Mass. The announcement came in a petition which was presented on behalf of the railroad to the Troy Common Council on July 18.

Southwestern Headquarters At Texarkana

The general offices of the Southwestern Transportation Company, motor coach and truck operating subsidiary of the St. Louis Southwestern, have been transferred from Little Rock, Ark., to the Texarkana National Bank Building, Texarkana, Ark.

Pennsylvania to Establish New Jersey Routes

Establishment of a motor coach system to operate from Philadelphia, Pa., to points throughout the southern part of New Jersey is planned by the Pennsylvania through its highway subsidiary, the Pennsylvania General Transit Company, and in conjunction with the Peoples Rapid Transit in which the Pennsylvania recently acquired a substantial interest.

The plans were revealed when the Pennsylvania General Transit Company filed with the Camden, N. J., city commission for local franchises on routes starting in Philadelphia and terminating in Millville, Bridgeton, Salem, Pennsgrove and Ocean City. It is expected that similar permits will be sought from the other municipalities as well as an intrastate certificate from the New Jersey Board of Public Utility Commissioners.

The proposed motor coach line would at present parallel the lines of the West Jersey & Seashore, a subsidiary of the Pennsylvania, but it is expected that the highway service would later extend to southern New Jersey points not now served by the railroad.

Pennsylvania Opposes Independents

The Pennsylvania, on July 29, filed with the Public Service Commission of Pennsylvania a complaint against the Colonial Stages and the Atlantic-Pacific Stages, independent motor coach operators, alleging that these concerns are operating an intrastate service in Pennsylvania without certificates from that state.

The complaint of the railroad charges that both independents advertise a Pittsburgh-Philadelphia route that dips across the state line at Emmittsburg, Md., with a deliberate intent on the part of the respondents to evade jurisdiction of the Pennsylvania commission.

Pennsylvania Commission Favors Railroad Applicant

The Pennsylvania General Transit Company, highway subsidiary of the Pennsylvania was favored over an independent operator when both recently applied to the Pennsylvania Public Service Commission for a certificate to operate a motor coach line in the western part of that state from the New York state line, north of Eldred to Port Allegeny. The independent applicant, whose certificate was denied, is the Edwards Motor Transit Company.

The Edwards application was made after the Pennsylvania proposed discontinuing some local trains in the territory involved. Later, however, the Pennsylvania General Transit Company came forward with its proposal to substitute motor coach service for the withdrawn trains.

Mo. P. Extends Service

The Missouri Southern Transportation Company, subsidiary of the Missouri Southern Railroad, has secured from the Missouri Public Service Commission, permission to operate motor coaches between Gorwood, Mo., and Salem, and between Van Buren and Glover. The transportation company plans eventually to establish a motor coach line from Poplar Bluff, Mo., to Jefferson City, via Rolla.

Cotton Belt Subsidiary Proposes New Texas Routes and Rates

The Southwestern Transportation Company, subsidiary of the St. Louis Southwestern, has recently applied to the Texas Railroad Commission for permission to operate motor coaches between Farmersville, Tex., and Dallas, via Wylie; between Gladewater and Gilmer, via Big Sandy; and between Naples and Maud, via Bassett.

The company also applied to the railroad commission for permission to make certain revisions in the fares charged on its Texas lines, and also for certain changes in schedules. The Southwestern Transportation Company's proposal is to readjust its rates so that the basic rate of fare will be 3.6 cents per mile, the same as the basis of rates for railway transportation. Present rates are said to vary, some being as high as 6 cents per mile and others less than 3 cents per mile. It is expected that the standardization by the Southwestern Transportation Company on the 3.6 cents per mile rate will be followed by other large operators in the state of Texas.

With five other motor coach lines, the Southwestern Transportation Company has applied to the Texas Railroad Commission for permission to use as a union motor coach terminal the old Cotton Belt station at Commerce and Lamar streets in Dallas, which has been remodelled into a well-equipped motor coach station. The station is now being used under a temporary permit by these lines.

Operating Restrictions Placed on N. J. Independent

The Board of Public Utility Commissioners of New Jersey recently granted the application of the Reading Transportation Company, highway subsidiary of the Reading, for the imposition of certain operating restrictions on Shore Service, Inc., independent operating company.

The applicant petitioned that the Shore Service Inc., be not permitted to accept passengers on its Camden-Wildwood motor coaches whose journeys begin and end between Cape May Court House and Wildwood. This restriction was imposed. The basis of the Reading application for the restriction was an agreement entered

by the independent during June 1928 when the railway subsidiary acquired by purchase municipal consents of the Shore Service, Inc., in the territory involved.

New England All Expense Vacation Tours

The New England Transportation Company has been conducting a number of all expense motor coach tours throughout its territory during the present summer vacation season. While these tours are available for individuals or groups and may be arranged to meet any desires as to stop-overs and side trips there are three regularly scheduled trips outlined in the folder describing the service.

The first of these is a three day New York tour on which the all expense charge is $33.50. Motor coaches making this tour leave Boston, Mass., every Monday, Thursday, Friday and Saturday at 9:00 a. m. The route follows the Boston Post road along Long Island sound to New York City where an over night stop is made. On the second day the tour proceeds along the Hudson river to West Point, over the Storm King highway and through the Berkshire hills to Williamstown, Mass., where another over night stop is made. On the third day the motor coaches return to Boston over the Mohawk trail.

The second is a two day Cape Cod tour which leaves Boston every Monday at 9:00 a. m. Visits are made to Plymouth Rock and other historic points before the motor coaches proceed to Provincetown, Mass., for an over night stop. Returning to Boston the route follows the south shore of the Cape through Hyannis, Hyannisport and Falmouth Heights. The charge for this tour is $22.50, including all expenses.

The third regular tour listed covers ten days with total expenses of $108.50. Motor coaches leave Boston every Monday and Thursday and proceed over the shore route to New York City. From this latter point the route continues via Delaware Water Gap, Lackawanna trail, Pocono mountains, Binghamton and Buffalo to Niagara Falls. The return trip from Niagara Falls is made via Philadelphia to New York and thence via West Point, Storm King highway, Williamstown and the Mohawk trail.

Burlington Increases Nebraska Motor Coach Service

The Burlington Transportation Company, subsidiary of the Chicago, Burlington & Quincy, which recently began the operation of motor coaches in the state of Nebraska, is now providing eight round trips daily over the 66-mile route between Omaha, Neb., Ashland and Lincoln. The run is made in two hours and a half, the first daily departures from both points being made at 6:30 A.M., and the last departures at 9:30 P. M.

Three of the Omaha-Lincoln schedules continue to Fairmont and Hastings, the latter point being 177 miles from Omaha. The Burlington Transportation Company is also operating three round trips daily between Lincoln and Grand Island, a distance of 101 miles, and three round trips

Effective August 3, 1929
Burlington Transportation Company
Burlington Route
Motor Coach Schedules
Omaha Lincoln Hastings
Lincoln York Grand Island
Grand Island Hastings
Omaha Shenandoah Clarinda
F. D. HITE General Manager Omaha, Neb.
T. J. THOMAS President Chicago, Ill.
A. COTSWORTH, JR. Traffic Manager Chicago, Ill.

Cover of New Burlington Transportation Company Timetable

daily between Grand Island and Hastings a distance of 26 miles. The company has just established a motor coach line between Omaha, Council Bluffs, Ia., Shenandoah and Clarinda. Three round trips are operated over this line daily. The Burlington Transportation and the Missouri Pacific Transportation Company have just opened a joint motor coach terminal at 17th and Farnam Streets in Omaha.

Pennsylvania General Transit Seeks Charter Revision

The Pennsylvania General Transit Company, highway subsidiary of the Pennsylvania, has applied to the Public Service Commission of Pennsylvania for an amendment to its charter which would permit the operation of special party motor coach service in all the 54 Pennsylvania counties in which the railroad subsidiary now holds franchise.

The petition also seeks a further charter revision which would permit the Pennsylvania General Transit Company to operate motor coaches outside the state of Pennsylvania. The original grant provides only for operation within that state.

Tariffs Must Be Filed in Ohio

An order requiring the filing and publication of all tariffs of interstate motor coach and motor truck lines was issued by the Ohio Public Utilities Commission on August 7, temporarily at least settling the question of the commission's authority to regulate rates of the interstate highway lines. This order putting interstate operators on the same basis as intra-state operators of motor coaches and trucks was protested without avail by the Ohio Association of Commercial Haulers.

Orders for Equipment

THE BALTIMORE & OHIO has accepted delivery of three A. C. F. 23-passenger parlor motor coaches.

THE UNION PACIFIC has accepted delivery of two Type Y Yellow parlor coaches.

THE RICHMOND, FREDERICKSBURG & POTOMAC has accepted delivery of two A. C. F. 230-in. wheel base motor coach chassis.

View of Main Concourse in Baltimore & Ohio Train Connection Motor Coach Terminal, Forty-Second Street, New York

THE MISSOURI PACIFIC TRANSPORTATION COMPANY has received an additional Type Y Yellow parlor motor coach.

THE READING TRANSPORTATION COMPANY has received four Type Z—240 Yellow coaches from the General Motors Truck Company, Pontiac, Mich.

THE GENERAL MOTORS TRUCK COMPANY has delivered three Type W Yellow observation coaches to the Oregon-Washington Railroad & Navigation Company. These coaches will be operated by the Union Pacific Stages, Inc.

THE ATLANTIC CITY & SHORE RAILROAD has accepted delivery of four additional Type Z 29-passenger Yellow Coaches.

THE INTERSTATE TRANSIT LINES, motor coach operating subsidiary of the Union Pacific, has ordered 44 six-cylinder parlor type White motor coaches from the White Company, Cleveland, Ohio.

Motor Transport Officers

Thomas D. Jennings has been appointed traffic manager of the Union Pacific Stages, with headquarters at Portland, Ore. Mr. Jennings was formerly traffic manager of the Washington Motor Coach System.

Guy Hill, chief clerk in the passenger department of the Southern Pacific, Portland, Ore., has been appointed chief of the tariff bureau of the motor coach lines recently merged under the control of the Pacific Transportation Securities, Inc. Mr. Hill's headquarters will be at San Francisco, Cal.

Official Changes on Pacific Coast Lines

The following appointments have been announced by T. B. Wilson, president of the Southern Pacific Motor Transport and of California Parlor Car Tours and executive vice-president of the Pickwick Stages System and California Transit:

California Transit: **L. D. Jones,** regional manager, headquarters Los Angeles, jurisdiction over Los Angeles Terminal; **Ben Evans,** superintendent of operation, San Joaquin division, headquarters Oakland, Calif., jurisdiction Oakland to (but not including) Fresno, Fresno to Sacramento via Stockton, Fresno to Tracy via Los Banos, Stockton to Carl Inn and Mather, Stockton to Tuolumne, Oakland to Stockton via Tracy, and Livermore to San Jose. **J. H. Hodge,** superintendent of operation, Valley Division, headquarters Los Angeles, jurisdiction from Los Angeles to Fresno, Los Angeles to Bishop and local lines around Fresno; **F. W. Ackerman,** auditor, headquarters, Oakland; **M. McKinstry,** treasurer, same headquarters.

Pacific Transportation Securities: **H. A. Wooster,** general traffic manager; **C. E. Quigley,** assistant auditor.

Pickwick Stages System: **B. P. McConnaha,** district manager, Redwood Highway division, headquarters Eureka, Calif., with jurisdiction from San Francisco to Grants Pass but not including the two termini; **Walter Maxwell,** superintendent of operation, headquarters Eureka with same territory as Mr. McConnaha; **F. W. Ackerman,** auditor; **M. McKinstry,** treasurer; **George Martinson,** assistant treasurer, headquarters Los Angeles.

Southern Pacific Motor Transport Company: **F. W. Ackerman,** auditor, headquarters Oakland, succeeding F. L. McCaffery, resigned; **M. McKinstry,** treasurer, headquarters Oakland, succeeding C. M. Scott, resigned.

Pickwick Stages and *California Transit.* **H. A. Wooster,** general traffic manager, headquarters San Francisco.

Southern Pacific Motor Transport, California Parlor Car Tours and *Auto Transit Company:* **L. D. Jones,** regional manager, headquarters Los Angeles, jurisdiction south of San Francisco, via Coast route.

Pickwick Stages, Southern Pacific Motor Transport, and California Parlor Car Tours: **Ralph L. Heple,** superintendent of operation, headquarters San Francisco, jurisdiction San Francisco to San Luis Obispo.

Pickwick Stages, California Transit, Southern Pacific Motor Transport and *Sierra Nevada Stages:* **T. Finkbohner,** superintendent of operation, Central division, headquarters Oakland, jurisdiction Oakland to Medford, Oakland to Salt Lake City, Oakland to Stockton via Martinez and the San Rafael-Santa Rosa-Vallejo district.

Pickwick Stages, Southern Pacific Motor Transport, California Parlor Car Tours and *California Transit:* **F. E. Burdett,** superintendent of operation, headquarters Los Angeles, jurisdiction San Luis Obispo to El Centro and Los Angeles to Blythe.

Pickwick Stages, California Transit, Southern Pacific Motor Transport, California Parlor Car Tours and *Auto Transit:* **Ralph L. Heple,** superintendent of operation, headquarters San Francisco, jurisdiction San Francisco terminal.

Pickwick Stages, Southern Pacific Motor Transport, California Parlor Car Tours, California Transit and *Union Auto Transportation:* **Tom Stone,** superintendent of maintenance and equipment, headquarters Los Angeles, jurisdiction lines south of San Francisco via Coast route to and including El Paso, Tex.

Pickwick Stages, California Transit, Southern Pacific Motor Transport, California Parlor Car Tours, Sierra Nevada Stages and *Auto Transit:* **E. J. Thompson,** regional manager, headquarters San Francisco, jurisdiction all lines San Francisco to Medford via Pacific Highway, San Francisco to Grants Pass via Redwood Highway and the California Transit Lines Los Angeles to Bishop, Los Angeles to Medford and San Francisco to Salt Lake; **R. M. Ahrens,** superintendent of maintenance and equipment, headquarters Oakland, with jurisdiction over all shops and equipment San Francisco and North via Pacific and Redwood Highways but not including Medford and Grants Pass, Ore., and all shops and equipment of the California Transit (Yellóway) north of Los Angeles and south of Medford and eastward including Salt Lake City.

Southern Pacific Motor Transport Auto Transit and *Sierra Nevada Stages:* **C. E. Quigley,** assistant auditor, headquarters Los Angeles.

Among the Manufacturers

The Kansas City district sales offices of the **AC Spark Plug Company** have been moved to enlarged quarters in the Medical Arts building, Thirty-fourth street and Broadway, that city.

C. Eustace Dwyer has been appointed assistant sales manager in charge of national accounts for the **Autocar Company.** Mr. Dwyer is a graduate of Columbia University where he studied mining engineering, completing the course in 1911. Upon his graduation he became a mining engineer with the American Smelting & Refining Company and from 1917 to 1919 was a captain in the chemical warfare service of the United States Army. At the close of this army service, Mr. Dwyer joined the production engineering staff of the Willys-Overland Company and later became a member of the inspection and sales engineering staff of the Timken-Detroit Axle Company. From 1924 to 1928 he was general sales manager of the Six-Wheel Company. He joined the Autocar organization early this year.

New Officers of Fruehauf Trailer Company

At a meeting of the board of directors of the Fruehauf Trailer Company, Detroit, Mich., August C. Fruehauf was elected chairman of the board. At the same time, Harvey C. Fruehauf was elected president; Harry R. Fruehauf was elected vice-president and director of purchases; Earl L. Vosler was elected vice-president and treasurer; G. W. Chamberlin was elected vice-president and director of sales; and Roy W. Jacobs was elected secretary and assistant treasurer.

August C. Fruehauf